THE

AMERICAN JOURNAL

OF THE

MEDICAL SCIENCES.

EDITED BY

ISAAC HAYS, M.D.,

FELLOW OF THE PHILADELPHIA COLLEGE OF PHYSICIANS; PRESIDENT OF
THE ACADEMY OF NATURAL SCIENCES OF PHILADELPHIA; MEMBER OF THE AMERICAN
PHILOSOPHICAL SOCIETY; ASSOCIATE FELLOW OF THE AMERICAN
ACADEMY OF ARTS AND SCIENCES,
&c. &c. &c.

NEW SERIES.

VOL. LIV.

PHILADELPHIA:
HENRY C. LEA.
1867.

R
11
A5
n.s.
v.54
cop.2

Entered according to the Act of Congress, in the year 1867, by

HENRY C. LEA,

in the Office of the Clerk of the District Court of the United States in and for the
Eastern District of the State of Pennsylvania.

6742

PHILADELPHIA:
COLLINS, PRINTER.

TO READERS AND CORRESPONDENTS.

Communications have been received from Drs. Salisbury, Stephen Smith, S. W. Gross, J. Wooster, J. H. Pooley, G. Martin, J. J. Radcliffe, E. M. Joslin, J. C. Nott, J. W. Moorman, J. P. Mettauer, S. Hubbard, C. B. Galloway, D. S. Welden, A. Godfrey, D. W. Blund, P. M. Rivers, J. G. Knox, F. S. Peiro, J. C. Reeve, and J. Tyson, all of which, with the papers already acknowledged but not yet published, shall receive a respectful consideration when articles are selected for the October number.

Two Reviews and several Bibliographical Notices, prepared for this number, have been unavoidably postponed, from want of room.

All articles intended for the *Original Department* of this Journal must be communicated to it *exclusively*.

Contributors who wish their articles to appear in the next number, should forward them before the 1st of August.

Compensation is allowed for original articles, and reviews, *except* when illustrations or extra copies are desired. A *limited* number of extra copies will be furnished to authors *if the request for them be made when the communication is sent.* The extensive circulation of this Journal renders extra copies of comparatively little value to authors who only desire their observations made known to their professional brethren.

The following works have been received:—

On the True First Stage of Consumption. Lectures delivered at the Royal Infirmary for Diseases of the Chest. By Horace Dobell, M. D., Physician to the Infirmary, etc. etc. London: John Churchill & Sons, 1867.

Acupressure: an Excellent Method of Arresting Surgical Hemorrhage and of Accelerating the Healing of Wounds. By William Pirrie, M. D., F. R. S. E., Prof. of Surgery in the University of Aberdeen, etc., and William Keith, M.R.C.S.E., M.D., Senior Surgeon to the Royal Infirmary of Aberdeen, etc. Illustrated by engravings on wood by Bagg. London: John Churchill & Sons, 1867. (From Prof. Pirrie.)

Notes on the Progress of Acupressure. By Sir J. Y. Simpson, Bart., M. D., D. C. L., Professor of Medicine and Midwifery in the University of Edinburgh. Edinburgh: Adam and Charles Black, 1867. (From the Author.)

On Addison's Disease: Clinical Lectures on Addison's Disease, and a Report on Diseases of the Supra-Renal Capsules. By Edward Headlam Greenhow, M. D., F. R. C. P.,etc. etc. London, 1866. (From the Author.)

On Insanity, and the Criminal Responsibility of the Insane. By Thomas More Madden, M. R. I. A., Licentiate of the King and Queen's College of Physicians in Ireland, etc. etc. Read before the Medical Society of the College of Physicians of Ireland. Dublin, 1866. (From the Author.)

On Hay-Fever, Hay-Asthma, or Summer Catarrh. By W. Abbotts Smith, M. D., M. R. C. P., and M. R. C. S., Physician to the North London Hospital for Diseases of the Chest, etc. etc. etc. Fourth edition. London, 1866. (From the Author.)

Lehrbuch der Ohrenheilkunde, mit Einschluss der Anatomie des Ohres. Von Dr. Von Tröltsch, a. ö. Prof. der Med. an der Universität Würzburg. Mit in den Text eingedruckten Holzschnitten. Dritte, umgearbeitete und stark vermehrte, Auflage. Würzburg: Druck und Verlag der Stahel'schen Buch- und Kunsthandlung, 1867.

Die Frage über die Heilbarkeit der Lungenphthisen Historisch, Pathologisch und Therapeutisch untersucht. Von Dr. Joh. Bapt. Ullersperger. Würzburg: Druck und Verlag der Stahel'schen Buch- und Kunsthandlung, 1867.

Behandlung der Croupoesen Pneumonie mit Veratrum-Præparaten. Von Dr. Theodor Kocher in Bern. Würzburg: Druck und Verlag der Stahel'schen Buch- und Kunsthandlung, 1866.

Practical Dissections. By Richard M. Hodges, M. D., formerly Demonstrator of Anatomy in the Medical Department of Harvard University. Second edition, thoroughly revised. Philadelphia: Henry C. Lea, 1867.

Obstetrics; the Science and the Art. By Charles D. Meigs, M. D., lately Professor of Midwifery and the Diseases of Women and Children in Jefferson Medical

College at Philadelphia, etc. etc. etc. Fifth edition, revised. With 130 illustrations. Philadelphia: Henry C. Lea, 1867.

Surgical Observations, with Cases and Operations. By J. Mason Warren, M. D., Surgeon to the Massachusetts General Hospital, Fellow of the American Academy of Arts and Sciences, etc. Boston: Ticknor & Fields, 1867. (From the Author.)

Elements of Human Anatomy: General, Descriptive, and Practical. By T. G. Richardson, M. D., Professor of Anatomy in the Medical Department of the University of Louisiana. Second edition, carefully revised, and illustrated by nearly 300 engravings. Philadelphia: J. B. Lippincott & Co., 1867.

Idiocy, and its Treatment by the Physiological Method. By Edward Seguin, M. D. New York: William Wood & Co., 1866.

Treatment of Fractures of the Lower Extremity by the Use of the Anterior Suspensory Apparatus. By N. R. Smith, M. D., Professor of Surgery in the University of Maryland. Baltimore: Kelly & Piet, 1867.

Modern Inquiries: Classical, Professional, and Miscellaneous. By Jacob Bigelow, M. D., late President of the American Academy of Arts and Sciences, and late a Professor in Harvard University. Boston: Little, Brown & Co., 1867.

Circular No. 5, War Department, Surgeon-General's Office, Washington, May 4, 1867. Report on Epidemic Cholera in the Army of the United States, during the year 1866. Washington, 1867.

An Inquiry into the Origin of Modern Anæsthesia. By the Hon. Truman Smith, late U. S. Senator. Hartford: Brown & Gross, 1867.

Watson Abridged: a Synopsis of the Lectures on the Principles and Practice of Physic, delivered at King's College, London. By Thomas Watson, M. D., F. R. C. P., etc. (Abridged from the last English edition.) With a concise but complete account of the properties, uses, preparations, doses, &c. (taken from the U. S. Dispensatory), of all the medicines mentioned in these lectures, and with other valuable additions. By J. J. Meylor, A. M., M. D. Philadelphia, 1867.

Recto-Vaginal and Recto-Labial Fistula, a New Method of Operating for. By Isaac E. Taylor, M. D., Professor of Obstetrics and Diseases of Women and Children in Bellevue Hospital Medical College, etc. etc. Albany, 1866. (From the Author.)

The Intracranial Circulation: an Essay to which was awarded the first prize of the Boylston Medical Society in 1867. By Thomas Dwight, Jr., House Surgeon of the Massachusetts General Hospital. Cambridge, 1867.

Human Cestoids: an Essay to which was awarded the second prize of the Boylston Medical Society for 1867. By F. R. Sturgis, House Surgeon of the Massachusetts General Hospital. Cambridge, 1867.

Report to the International Sanitary Conference of a Commission from that Body, on the Origin, Endemicity, Transmissibility, and Propagation of Asiatic Cholera. Translated by Samuel L. Abbot, M. D., etc. Boston, 1867. (From the Translator.)

Ununited Fracture Successfully Treated, with Remarks on the Operation. By Henry J. Bigelow, M. D., Professor of Surgery in the Medical College of Harvard University. With abstracts from Dr. Bigelow's clinical lectures on the subject, and cases. Reported by Richard H. Derby. Boston, 1867.

Medicine an Aggregate of Progressive Sciences. The Valedictory Address at the Commencement of the University of Maryland, March 9, 1867. By Prof. F. Donaldson, M. D. Baltimore, 1867.

Progress in School Discipline. Remarks of Dr. Morrill Wyman, of Cambridge, in support of the resolution to abolish the corporal punishment of girls in the public schools of the city, made in the Republican caucus, Nov. 26, 1866. Cambridge, 1866. (From the Author.)

Researches upon "Spurious Vaccination," or the Abnormal Phenomena accompanying and following Vaccination in the Confederate Army, during the recent American Civil War, 1861-1865. By Joseph Jones, M. D., Professor of Physiology and Pathology in the Medical Department of the University of Nashville, Tenn.

On Extraction of Soft Cataract by Suction. By A. D. Hall, M. D., Surgeon to Wills (Ophthalmic) Hospital. Oakwood Press, 1867. (From the Author.)

Code of Medical Ethics adopted by the American Medical Association. Revised to date. New York: William Wood & Co., 1867.

Prophylaxis: an Anniversary Oration delivered before the New York Academy of Medicine, Dec. 19, 1866. By John Ordronaux, M. D., LL. B., Fellow of the N. Y. Academy of Medicine, etc. New York: Baillière Brothers, 1867. (From the Author.)

Valedictory Address delivered before the Graduated Class of the National Medical College, Washington, D. C. By John Ordronaux, M. D., LL. B. Washington, 1867. (From the Author.)

Biographical Memoir of the late William Pepper, M.D. By THOMAS S. KIRKBRIDE, M. D. Prepared by request of the College of Physicians of Philadelphia. Philadelphia, 1866. (From the Author.)

Eulogium upon the Life, Professional Labours, and Public Services of Joseph Mather Smith, M. D., late Professor of the Theory and Practice of Physic. and of Materia Medica and Clinical Medicine, in the College of Physicians and Surgeons, New York, etc. etc. Delivered before the New York Academy of Medicine. By WILLIAM C. ROBERTS, M. D. With a Notice of his Public Labours, by Dr. ELISHA HARRIS, etc. New York, 1867. (From Gouverneur M. Smith, M. D.)

Transactions of the American Ophthalmological Society. Third Annual Meeting, Boston, June, 1866. New York, 1866.

Quarterly Summary of the Transactions of the College of Physicians of Philadelphia. From December 6, 1865, to November 7, 1866, inclusive. Philadelphia, 1867.

Proceedings of the Academy of Natural Sciences of Philadelphia. December, 1866; January, 1867.

Constitution and By-Laws of the Houston Medical Association. Houston, 1865.

Report of the Pennsylvania Hospital for the Insane, for the year 1866. By THOMAS S. KIRKBRIDE, M. D., Physician-in-Chief and Superintendent. Philadelphia, 1867. (From Dr. Kirkbride)

Report of the Board of Managers, Superintendents, and Treasurer of the Western Lunatic Asylum of Kentucky, for the year 1866. Frankfort, Ky., 1867.

State of New York. Twenty-fourth Annual Report of the Managers of the State Lunatic Asylum, for the year 1866. Albany, 1867.

Fiftieth Annual Report on the State of the Asylum for the Relief of Persons deprived of the Use of their Reason. Philadelphia, 1867.

Annual Report of the Metropolitan Board of Health. 1866. New York, 1867. (From Elisha Harris, M. D.)

Eleventh Annual Report of the Board of Managers of the Children's Hospital of Philadelphia. Philadelphia, 1867.

First Annual Report of the President of the Citizens' Association of Pennsylvania. 1867. Philadelphia, 1867.

Fortieth Annual Report of the Board of Inspectors of the Western Penitentiary of Pennsylvania, for 1866. Pittsburg, 1867. (From Dr. Rankin.)

Annual Report of the Commissioners of Emigration of the State of New York, for the year ending December 31, 1866. Including Report of the State Hospital. New York, 1867. (From Dr. Carnochan.)

Report of the Board of Health of the City and Port of Philadelphia, to the Mayor, for the year 1866. Philadelphia, 1867.

Thirteenth Report upon the Registration of Births, Marriages, and Deaths in the State of Rhode Island, for the year ending December 31, 1865. Prepared under the direction of JOHN R. BARTLETT, Secretary of State, by EDWIN M. SNOW, M. D. Providence, 1867. (From the Author.)

The following Journals have been received in exchange:—

Revue de Thérapeutique Médico-Chirurgicale. Par A. MARTIN-LAUZER, M. D. Nos. 3, 6, 8, 1867.

Annales Médico-Psychologiques. Par MM. les Docteurs BAILLARGER et CÉRISE. January, May, 1867.

Giornale Italiano Delle Malattie Veneree e Delle Malattie Della Pelle. Compilato e Diretto dall dott. G. B. SORESINA, Ispettore Sanitario di Milano. Fascicolo 1, 2, 3, 4, 5.

The British and Foreign Medico-Chirurgical Review. April, 1867.

The Medical Times and Gazette. April, May, 1867.

The British Medical Journal. Nos. 321 to 336 inclusive.

Edinburgh Medical Journal. March, April, May, 1867.

The Glasgow Medical Journal. March, May, 1867.

The Ophthalmic Review. April, 1867.

The Journal of Anatomy and Physiology. Conducted by G. M. HUMPHREY, M. D., Prof. Anat. Univ. Cambridge, WM. TURNER, M. D., Prof. Anat. Univ. Edinburgh, ALFRED NEWTON, M. A., Prof. Zool. and Comp. Anat., Univ. Cambridge, E. PERCIVAL WRIGHT, M. D., Lect. Zool. Univ., Dublin, and J. W. CLARK, M. A., Superintendent Univ. Museums of Zool. and Comp. Anat., Nov., 1866, May, 1867.

Journal of Cutaneous Medicine and Diseases of the Skin. Edited by ERASMUS WILSON, F. R. S. April, 1867.

The Medical Mirror. March, May, June, 1867.

Medical Press and Circular. April, May, 1867

The Royal London Ophthalmic Hospital Reports and Journal of Ophthalmic Medicine and Surgery. Edited by J. C. WORDSWORTH, J. W. HULKE, and J. HUTCHINSON. Vol. V., parts 1, 2, 3, 4.

Canada Medical Journal. Edited by G. E. FENWICK, M. D., and F. W. CAMPBELL, M. D. February, March, April, May, 1867.

The Boston Medical and Surgical Journal. Edited by SAMUEL ABBOT, M. D., and LUTHER PARKS, Jr., M. D. April, May, June, 1867.

The American Journal of Insanity. Edited by the Medical Officers of the New York State Lunatic Asylum. April, 1867.

The Cincinnati Lancet and Observer. Edited by EDWARD B. STEVENS, M. D., and JOHN A. MURPHY, M. D. March, April, May, June, 1867.

The St. Louis Medical and Surgical Journal. Edited by M. L. LINTON, M. D., and FRANK W. WHITE, M. D. January, February, March, April, May, June, 1867.

The New York Medical Journal. April, May, 1867.

The Medical Record. April, May, June, 1867.

The Buffalo Medical and Surgical Journal. Edited by JULIUS F. MINER, M. D. March, April, May, 1867.

The Chicago Medical Examiner. Edited by N. S. DAVIS, M. D. April, May, June, 1867.

The Chicago Medical Journal. March, April, May, June, 1867.

The Medical and Surgical Reporter. Edited by S. W. BUTLER, M. D. April, May, June, 1867.

The Cincinnati Journal of Medicine. Edited by GEORGE C. BLACKMAN, M. D., THEOPHILUS PARVIN, M. D., and T. H. KEARNEY, M. D. March, April, May, 1867.

The Richmond Medical Journal. Edited by E. S. GAILLARD, M. D., and W. S. MCCHESNEY, M. D. April, May, 1867.

Atlanta Medical and Surgical Journal. Edited by J. G. WESTMORELAND, M. D., and W. F. WESTMORELAND, M. D. March, April, May, June, 1867.

Southern Journal of Medical Sciences. Edited by D. WARREN BRICKELL, M. D., C. BEARD, M. D., and W. S. MITCHELL, M. D. May, 1867.

The St. Louis Medical Reporter. Edited by J. S. B. ALLEYNE, M. D., and O. F. POTTER, M. D. March, April, May, June, 1867.

The Nashville Journal of Medicine and Surgery. Edited by Profs. W. K. BOWLING, P. F. EVE, JOS. JONES, and G. S. BLACKIE. March, April, May, June, 1867.

The Galveston Medical Journal. Edited by GREENSVILLE DOWELL, M. D. January, February, March, April, May, 1867.

Southern Medical and Surgical Journal. Edited by Drs. DUGAS, DOUGHTY, and FORD. May, 1867.

The New Orleans Medical and Surgical Journal. Edited by Drs. STONE, JONES, HERRICK, CHAILLÉ, and NICHOLS. May, 1867.

The Detroit Review of Medicine and Pharmacy. Edited by G. P. ANDREWS, M. D., S. P. DUFFIELD, Ph. D., and E. W. JENKS, M. D. March, April, May, 1867.

The Leavenworth Medical Herald. Edited by L. A. LOGAN, M. D., and T. SINKS, M. D. June, 1867.

The American Journal of Pharmacy. Published by Authority of the Philadelphia College of Pharmacy. Edited by WM. PROCTER, Jr. May, 1867.

The Druggists' Circular and Chemical Gazette. April, May, June, 1867.

The Journal of Materia Medica. Conducted by JOSEPH BATES, M. D., and H. A. TILDEN. March, April, May, 1867.

The Dental Cosmos. Edited by J. H. MCQUILLEN, D. D. S., and GEORGE J. ZIEGLER, M. D. April, May, June, 1867.

The American Journal of Dental Science. Edited by A. SNOWDEN PIGGOT, M. D., and F. J. S. GORGAS, M. D., D. D. S. May, June, 1867.

The American Journal of Science and Arts. March, May, 1867.

The American Naturalist. Published by the Essex Institute, Salem, Mass. April, May, 1867.

The Scientific Journal. May, 1867.

Communications intended for publication, and Books for Review, should be sent *free of expense*, directed to ISAAC HAYS, M. D., Editor of the American Journal of the Medical Sciences, care of Mr. Henry C. Lea, Philadelphia. Parcels directed as above, and (carriage paid) under cover, to Mr. Charles J. Skeet, Bookseller, No. 10 King William Street, Charing Cross, *London;* or M. Hector Bossange, Lib. quai Voltaire, No. 11, *Paris*, will reach us safely and without delay.

CONTENTS

OF THE

AMERICAN JOURNAL

OF THE

MEDICAL SCIENCES.

NO. CVII. NEW SERIES.

JULY 1867.

ORIGINAL COMMUNICATIONS.

MEMOIRS AND CASES.

ART. PAGE

I. Notes of Ninety-eight Cases of Epidemic Cerebro-Spinal Meningitis, treated in the Philadelphia Hospital (Blockley) during the months of December, 1866, and January, February, and March, 1867. By W. H. H. Githens, M. D. (Extract from Proceedings of "Association of Philadelphia Hospitals.") 17

II. On Luxation of the Body of the Sternum: with Remarks on the Anatomical Structure of the Superior Sternal Articulation. By John H. Brinton, M. D., one of the Surgeons of St. Joseph's Hospital, Philadelphia; and Lecturer on Operative Surgery. 39

III. Solvents for Cholesterine, &c. &c. By T. H. Buckler, M. D., of Baltimore. 51

IV. On the Influence of Antecedent Disorders upon Organic Affections of the Heart and Brain. By E. Holden, M. D., of Newark, N. J. . . . 54

V. Contributions to the Statistics of Human Growth. By W. S. W. Ruschenberger, M. D., U. S. Navy. 67

VI. Case of Axillary Aneurism; Successful Ligation of Left Subclavian between the Scaleni; Suppuration of the Tumour: Hemorrhage on the forty-third day; Gangrene of Limb; Ligation of Subscapular Artery; Amputation of Arm at upper third; Hemorrhage on sixty-seventh day; Removal of Humerus at the Joint: Recovery. By Thomas George Morton, M. D., one of the Attending Surgeons of the Pennsylvania Hospital, and one of the Surgeons of the Wills (Ophthalmic) Hospital, Philadelphia. (With four wood-cuts.) 70

VII. On Astigmatism, considered in its Relations to Defective Vision, Asthenopia, and Progressive Myopia. By John Green, M. D., of St. Louis, Mo. 82

VIII. Bromide of Potash in Acute and Chronic Affections of the Testis. By Bedford Brown, M. D., Washington, D. C. 95

IX. Remarks on the Operation of J. Marion Sims for Dysmenorrhœa depending on Anteflexion of Uterus. By J. C. Nott, M. D., of Baltimore. 98

X. Artificial Anus from Gunshot Wound, operated on by Free Abdominal Section. By R. A. Kinloch, M. D., late Surgeon of the Roper Hospital, Professor of Materia Medica and Therapeutics in the Medical College of the State of South Carolina. 105

PAGE

ART.

XI. Case of Elephantiasis Græcorum, treated by Ligature of the Common Carotid Artery on both sides. By J. M. Carnochan, M. D., Surgeon-in-Chief to the State Hospital, New York, formerly Professor of Clinical Surgery, &c. (With two plates.) 109

XII. Successful Removal of a Fibro-Plastic Tumour from the Body of the Right Vocal Cord, with the Aid of the Laryngoscope. By Henry K. Oliver, M. D., of Boston. 115

XIII. Case of Gunshot Wound of the Knee-Joint; Removal of the Ball from the Articulation; Recovery. By Walter F. Atlee, M. D., of Philadelphia. 127

TRANSACTIONS OF SOCIETIES.

XIV. Summary of the Transactions of the College of Physicians of Philadelphia. 129
  Abortion: Commencing Amputation of the Left Thigh from being encircled by the Funis, and probable Death of the Fœtus from Compression of the Cord. By Dr. A. Nebinger. . . . 129
  Report on Meteorology and Epidemics. By Dr. W. Lehman Wells. 130

XV. Summary of the Proceedings of the Pathological Society of Philadelphia. 135
  Tuberculous Disease of Testis. By Dr. Packard. 135
  Cystic Disease of the Testicle, from Injury. By Dr. Packard. . 135
  Cystic Disease and Degeneration of Kidney. By Dr. James Tyson. 136
  Spina Bifida; Death at the Age of 32 Years. By Dr. Wm. Pepper. 137
  Intra-Capsular Fracture. By Dr. H. Allen. 138
  Extensive Epithelioma of Stomach, without Distinctive Symptoms during Life. By Dr. Packard. 138
  Cancer of Stomach, Liver, Spleen, and Mesenteric Glands. By Dr. Edw. Rhoads. 141
  Tuberculosis of Lungs, Bronchial Glands, and Abdomen. By Dr. Wm. Pepper. 143
  Recovery from Perforation of the Vermiform Appendix of the Cæcum. By Dr. Wm. Pepper. 145
  On some Symptoms which follow Sudden Arrest of the Circulation in the Main Artery of a Limb. By Dr. John Ashhurst, Jr. . 147
  Supernumerary Rib. By Dr. Wm. Pepper. 148

REVIEWS.

XVI. Disinfection.
  1. Traité des Desinfectants sous le Rapport de l'Hygiène Publique, etc. etc. Par M. A. Chevallier, Pharmacien-Chimiste, Officier de la Légion d'Honneur, etc. etc. Paris, 1862. pp. 180.
  2. Third Report of the Commissioners appointed to inquire into the Origin and Nature of the Cattle Plague. London, 1866.
    a. Microscopical Researches on the Cattle Plague. By Lionel S. Beale, M. B., F. R. S.
    b. On Disinfection and Disinfectants. By R. Angus Smith, Ph. D., F. R. S.
    c. On the Application of Disinfectants in Arresting the Spread of Cattle Plague. By Wm. Crookes, F. R. S.
  3. On Deodorization and Disinfection. By Thomas Herbert Barker, M. D., F. R. S. E. (Hastings Prize Essay.)
  4. A Manual of Practical Hygiene, prepared especially for use in the Medical Service of the Army. By E. A. Parkes, M. D., F. R. S. Second edition. London, 1866.
  5. Proceedings and Debates of the Third National Quarantine Convention, held in the City of New York. 1859.
  6. Disinfection. By E. R. Squibb, M. D. Brooklyn, N. Y. (Report of the Committee on Disinfection to the Academy of Medicine.)

ART. PAGE

7. Chemistry, Theoretical, Practical, and Analytical, as applied and relating to the Arts and Manufactures. By Dr. Sheridan Muspratt, F. R. S. E., M. R. I. A., F. G. S. Vol. I. p. 556. Art. "Disinfection."
8. Hints on the Control and Prevention of Infectious Diseases in Camps, Transports, and Hospitals. By Elisha Harris, M. D. Sanitary Commission Document, S.
9. On the Utility and Application of Heat as a Disinfectant. By Elisha Harris, M.D. (Proceedings of the Fourth National Sanitary and Quarantine Convention, 1860.)
10. North British Review, June, 1866.
11. Annual Report of the Metropolitan Board of Health, 1867. New York, 1867. 149

XVII. Clinique Médicale sur les Maladies des Femmes. Par M. Gustave Bernutz, Médecin de la Pitié; et M. Ernest Goupil. Médecin de l'Hôpital de Lourcine. Tome premier. Paris, 1860. Tome deuxième. 1862.
Clinical Memoirs upon Diseases of Women. By M. Gustave Bernutz and M. Ernest Goupil. Vol. I. pp. 610; Vol. II. pp. 771.
The same translated and edited by Alfred Meadows, M. D. New Sydenham Society, London, 1866. Vol. I pp. 276; Vol. II. pp. 270. . . . 166

XVIII. The Indigestions; or, Diseases of the Digestive Organs Functionally Treated. By Thomas King Chambers, Honorary Physician to H. R. H. the Prince of Wales, etc. etc. 8vo. pp. 287. Philadelphia: Henry C. Lea, 1867. 184

XIX. St. George's Hospital Reports. Edited by John W. Ogle, M. D., F. R. C. P., and Timothy Holmes, F. R. C. S. Vol. I. 1866. 8vo. pp. 444. London: John Churchill & Sons. 187

BIBLIOGRAPHICAL NOTICES.

XX. Surgical Observations, with Cases and Operations. By J. Mason Warren, M. D., etc. 8vo. pp. xvi., 631. Boston: Ticknor & Fields, 1867. 201

XXI. Reports of American Hospitals for the Insane.
1. Of the Pennsylvania Hospital for the Insane, for the year 1866.
2. Of the Western Pennsylvania Hospital, for the year 1866.
3. Of the Eastern Asylum of Virginia, for the fiscal year 1865–66.
4. Of the West Virginia Hospital, for the years 1864, 1865, and 1866.
5. Of the Eastern Asylum of Kentucky, for the fiscal year 1865–66.
6. Of the Western Asylum of Kentucky, for the year 1866.
7. Of the Northern Ohio Asylum, for the fiscal year 1866.
8. Of the Southern Ohio Asylum, for the fiscal year 1865–66.
9. Of the Illinois State Hospital, for the fiscal years 1864–65 and 1865–66.
10. Of the Insane Asylum of Louisiana, for the year 1866. . . . 202

XXII. Transactions of the New Hampshire Medical Society, at its Seventy-fifth and Seventy-sixth Anniversaries. The first held at Portsmouth, June 27, 28, 1865; the second at Hanover, June 5, 6, 1866. 8vo. pp. 125. Manchester, N. H., 1866. 209

XXIII. Obstetrics; the Science and the Art. By Charles D. Meigs, M. D., etc. etc. Fifth edition, revised. With 130 illustrations. 8vo. pp. 760. Philadelphia: Henry C. Lea, 1867. 212

XXIV. A Memoir on Osteo-Myelitis. By John A. Lidell, A. M., M. D., late Surgeon U. S. Vols., &c. &c. 213

XXV. Treatment of Fractures of the Lower Extremity by the Use of the Anterior Suspensory Apparatus. By N. R. Smith, M. D., Professor of Surgery in the University of Maryland. 8vo. pp. 70. Baltimore: Kelly & Piet, 1867. 214

XXVI. Practical Dissections. By Richard Hodges, M. D., formerly Demonstrator of Anatomy in the Medical Department of Harvard University.

ART. PAGE

Second edition, thoroughly revised. 12mo. pp. 286. Philadelphia: Henry C. Lea, 1867. 214

XXVII. Notes on Fractures of the Upper Extremity. By John H. Packard, M.D., one of the Surgeons of the Episcopal Hospital of Philadelphia. 8vo. pp. 58. New York, 1867. 215

XXVIII. Researches upon "Spurious Vaccination," or the Abnormal Phenomena accompanying and following Vaccination in the Confederate Army during the recent American Civil War. By Joseph Jones, M.D., Professor of Physiology and Pathology in the Medical Department of the University of Nashville, Tenn. 8vo. pp. 134. Nashville, Tenn., 1867. 216

XXIX. Medico-Chirurgical Transactions. Vol. XLIX. (Second Series, Vol. XXXI.) 8vo. pp. lviii., 224. London: Longmans, Green & Co., 1866. 217

XXX. Transactions of the Obstetrical Society of London, for the year 1866. Vol. VIII. 8vo. pp. 403. London, 1867. 221

XXXI. The Microscope in its Application to Practical Medicine. By Lionel S. Beale, M.B., F.R.S., Physician to King's College Hospital, Professor of Physiology and of General and Morbid Anatomy in King's College, London, &c. &c. Third edition, with numerous original illustrations. 8vo. pp. 320. London: John Churchill & Sons, 1867. . . 229

XXXII. The Progress of Acupressure.

1. Acupressure: an Excellent Method of Arresting Surgical Hemorrhage, and of Accelerating the Healing of Wounds. By William Pirrie, C.M., M.D., A.M., F.R.S.E., &c. &c.; and William Keith, M.R.C.S.E., M.D., &c. &c. Illustrated by engravings on wood. Royal 8vo. pp. 190. London: John Churchill & Sons, 1867.

2. Notes on the Progress of Acupressure. By Sir J. Y. Simpson, Bart., M.D., D.C.L., &c. 8vo. pp. 24. Edinburgh: Adam and Charles Black.

3. Medical Times and Gazette, 1865 and 1866, *passim*. 234

XXXIII. Behandlung der Croupoesen Pneumonie mit Veratrum-Præparaten. Von Dr. Theodor Kocher. 8vo. pp. 96. Würzburg, 1866.

Treatment of Anaplastic Pneumonia by Preparations of Veratrum. By Dr. Theodore Kocher, of Bern. 236

XXXIV. Die Frage über die Heilbarkeit der Lungenphthisen; Historisch, Pathologisch und Therapeutisch untersucht. Von Dr. Joh. Bapt. Ullersperger. 8vo. pp. 275. Würzburg. 1867.

The Question as to the Curability of Pulmonary Phthisis, Historically, Pathologically, and Therapeutically considered. By Dr. J. B. Ullersperger. 237

XXXV. Lehrbuch der Ohrenheilkunde, mit Einschluss der Anatomie des Ohres. Von Dr. Von Tröltsch, A. O., Professor der Medizin un der Universität Würzburg. Dritte, umgearbeitete und stark vermehrte, Auflage. Würzburg, 1867. 8vo. pp. 438.

A Manual of Aural Medicine, including the Anatomy of the Ear. By Dr. Von Tröltsch, Aural Surgeon, Professor of Medicine in the University of Wurzburg. Third edition, revised and enlarged. 238

XXXVI. Catalogue of Obstetrical and other Instruments exhibited at the Conversazione of the Obstetrical Society of London, held, by permission, at the Royal College of Physicians, March 28th, 1866. With numerous illustrations. 8vo. pp. 229. London, 1867. 239

XXXVII. On the Growth of the Recruit and Young Soldier, with a View to a Judicious Selection of "Growing Lads" for the Army, and a Regulated System of Training for Recruits. By William Aitken, M.D. Edin., Professor of Pathology in the Army Medical School, etc. etc. etc. 16mo. pp. 72. London, 1862. 239

XXXVIII. The Science and Practice of Medicine. By William Aitken, M.D. Edinburgh, Professor of Pathology in the Army Medical School, etc. etc. etc. From the fourth London edition, with additions by Meredith Clymer, M.D., etc. etc. 2 vols. 8vo. pp. 955, 1114. Philadelphia: Lindsay & Blakiston, 1867. 239

QUARTERLY SUMMARY

OF THE

IMPROVEMENTS AND DISCOVERIES IN THE MEDICAL SCIENCES.

FOREIGN INTELLIGENCE.

Anatomy and Physiology.

PAGE
1. Anatomy of the Capsule of Tenon, and its Relations to the Muscles, Sclerotica, Conjunctiva, Caruncle, etc. By Dr. Liebreich. 241
2. New Lingual Muscle. By Bochdalek, Jr. 242
3. Professor Parkes's Recent Experiments "On the Elimination of Nitrogen by the Kidneys and Intestines during Rest and Exercise on a Diet without Nitrogen." 242
4. Cutaneous Absorption. By M. Hoffman. 245
5. Innervation of the Heart. By MM. E. and M. Cyon. . . 246
6. On the Mode and Duration of the Contraction of the Heart in Health and Disease. By Dr. Burdon-Sanderson. . . . 246

Materia Medica and General Therapeutics.

7. Protoxide of Nitrogen as an Anæsthetic. By M. Hermann. 248
8. Chloroform and Ether in Mixture. By Mr. Robert Ellis. . 248
9. Action of Digitalis. By M. Legroux. 248
10. Chlorinated Mixture. By Dr. W. D. Dobie. 248
11. Comparative Immunity of Rabbits to the Poisonous Action of Atropia. By Dr. W. Ogle. . 249

Medical Pathology and Special Therapeutics, and Practical Medicine.

12. Researches on Animal Temperature. By M. Peter. . . 249
13. Alterations in the Muscles in Fevers, and particularly in Smallpox. By M. G. Hayem. . . 250
14. Nightmare in Children. By Dr. Sydney Ringer. . . . 251
15. Chronic Gastric Ulcer. By Prof. Skoda. 252
16. Formation of Tubercle. By Dr. Richard Dawson. . . 254
17. Inoculation of Tubercle. By Mr. John Simon. . . . 255
18. Effects of Flannel and Scratching on the Skin. By Dr. Tilbury Fox. 256
19. Milk Diet in the Treatment of Diseases of the Heart. By Dr. Pécholier. 257
20. Chlorinated Mixture in Cholera. By Dr. W. D. Dobie. . 257
21. Use of Styrax Liquidus in the Treatment of Itch. By Dr. W. Schultze. 258

Surgical Pathology and Therapeutics, and Operative Surgery.

22. Some Complications of Gonorrhœa. By Mr. De Meric. . 258
23. Shampooing in Sprains. By M. Bérenger-Féraud. . . 259
24. On Opening Joints when the Seat of Traumatic Suppuration. By Prof. Roser. . . . 260
25. Injuries of the Head. By Prof. Roser. 261
26. Extensive Fracture of Pelvis without Lesion of the Pelvic Viscera. By Dr. Quinlan. . 261
27. Spontaneous Fracture. By Dr. Caspary. 262
28. Internal Strangulation of the Bowel by a Band, associated with a Reducible Hernia, successfully treated by Operation. By Dr. Thomas Bryant. . . 263
29. Paraffo-Stearine as a Substi-

PAGE
tute for Starch, Plaster of Paris, &c., in Bandages and Splints. By Mr. James Startin. . . 264
30. Dressing for Wounds. By M. Foucher. 265

OPHTHALMOLOGY.

31. Relative Value of Atropia and of Mercury in the Treatment of Acute Iritis. By Mr. T. Pridgin Teale. 265
32. Inflammation of the Eye occurring some little time after Smallpox. By Mr. Hutchinson. 267
33. Loss of the Left Eye from the Lodgment within it of a Portion of a Gun-Cap; Inflammation of the Stump more than Seven Years after the Injury, followed by Sympathetic Ophthalmia of the Right Eye. By Mr. George Lawson. 268
34. On Excision of the Eyeball in the Acute Stage of Traumatic Ophthalmitis. By Jonathan Hutchinson, Esq. . . . 269
35. New Method of Extracting in Cases of Cataract. By Dr. C. B. Taylor. 270
36. Operation for Solution of Senile Cataracts, commenced at an early period, without allowing the Cataract to ripen. By Mr. J. Hutchinson. 271

MIDWIFERY.

37. Treatment of Labour complicated with Ovarian Tumour. By Dr. W. S. Playfair. . . 271
38. Cephalotripsy. By Dr. Kidd. 272
39. Protracted Gestation. By Dr. C. Joynt. 272

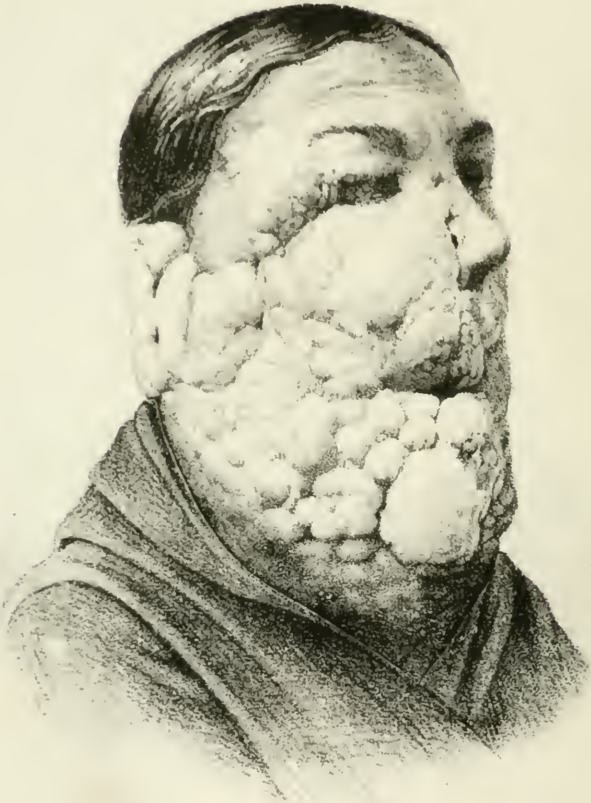
AMERICAN INTELLIGENCE.

ORIGINAL COMMUNICATIONS.

Pathology and Treatment of Glucosuria and Albuminuria. By M. C. Lea, Esq. 273
Pyæmia? Consecutive to a Gunshot Wound which had Healed Sixteen Months previously, resulting in Death. By S. J. Radcliffe, A. M., M. D. 274
Wound of Loins by a Shell, with Fracture of Spinous Process of Second and Third Lumbar Vertebræ; Recovery. By Philip S. Wales, M. D. 275
Puerperal Convulsions treated by Bromide of Potassium. By Chas. C. Shoyer, M. D. 276
Citric Acid in Metritis. By Chas. W. Oleson, M. D. 277
A Case of Voluntary Self-Emasculation. By D. N. Rankin, M. D. 278
Excision of Fibro-Malignant Tumour from Right Side of Neck. By J. F. Shaffner, M. D. . . 279
Report of a Case of Vesico-Vaginal Fistula. By Clarkson Freeman, Esq., M. D. 280
Extirpation of Nail of Thumb under Anæsthesia by Cold. By John Parsons, M. D. . . 281
Anencephalic Monster. By A. A. Moore, M. D. 281
Malformation of the Genital Organs. By T. H. Barton, M. D. 282

DOMESTIC SUMMARY.

Relation of Heat to Mental Work. By Dr. J. S. Lombard. . . . 282
Two Attacks of Measles within Six Weeks in the same Patient. By Dr. Minot. 284
Ear Douche. By Dr. E. H. Clarke. 284
Deep Cervical Tumour, the Removal of which involved the Exsection of a Portion of the Internal Jugular Vein. By Dr. W. W. Greene. 284
Median Lithotomy. By Dr. Thos. M. Markoe. 285
Anterior Dislocation of the Elbow-Joint without Fracture of Olecranon successfully reduced. By Dr. R. P. Hunt. . . . 285
Abscess in the Appendix Vermiformis; Incision; Recovery. By Dr. J. H. H. Burge. . . . 285
Ligature of the Subclavian Artery. By Prof. Willard Parker. . . 285
Spondylisthesis Causing Difficult Labour. By Dr. James Blake. 285

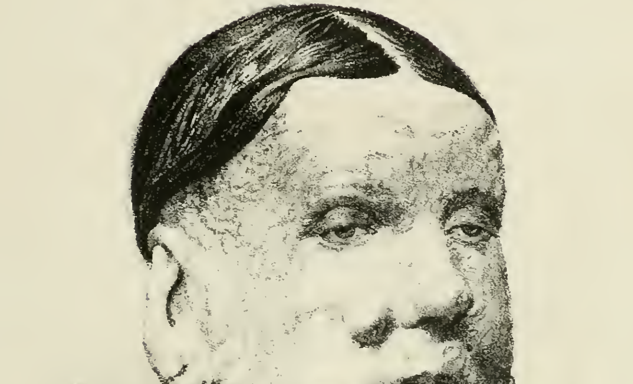


From Photograph by Kelly N.Y.

D^R CARNOCHAN'S CASE
OF
ELEPHANTIASIS GRÆCORUM TREATED BY LIGATURE
OF BOTH COMMON CAROTID ARTERIES

The Figure represents the patient before the operations and shows the Hypertrophied and diseased condition of the tissues of the head face & neck.

Am. Journ. Med. Sciences Vol. LIV. Pl. II.



From Photograph by Kelly N. Y.

Represents the same patient eight years after the ligature of the Common Carotid arteries, and the subsequent changes effected in the diseased tissues.

THE

AMERICAN JOURNAL

OF THE MEDICAL SCIENCES

FOR JULY 1867.

ART. I.—*Notes of Ninety-eight Cases of Epidemic Cerebro-spinal Meningitis, treated in the Philadelphia Hospital (Blockley) during the months of December,* 1866, *and January, February, and March,* 1867. By W. H. H. GITHENS, M. D. (Extract from Proceedings of "Association of Philadelphia Hospitals.")

DURING the winter that has just passed, our city has again been visited by an epidemic of cerebro-spinal meningitis, differing in some of its characters from that disease described by writers in the early part of the present century, and neither so virulent nor so fatal as that which devastated Manayunk and some neighbouring villages a few years since.

Our opportunities for observing the characteristics of this epidemic have been unusually favourable. The cases were treated in the Philadelphia Hospital, under the supervision of Drs. Stillé and Ludlow, the visiting physicians.

My earnest thanks are due to my fellow residents—especially to Drs. Orvis, Jenks, and Weightman, of the medical wards—for valuable and untiring assistance in collecting and arranging the data of the accompanying condensed statement, which embraces the accurate details of ninety-eight cases. Somewhat full histories are given of seven cases; these will serve to show the progress of the disease and the usual remedies employed.

CASE 1. George McLoughlin, æt. 47, a drayman, of intemperate habits, was admitted into the hospital December 4th at 4 P. M. He said he had been drinking for a few days, complained of feeling slightly unwell, had a pain in his head, and some slight feeling of nausea. He was sent to the out-wards. At 10 o'clock P. M. he was found wandering around, by the watchman; who, considering him drunk, took him to the drunkards' ward. He was slightly delirious all night, talking quietly about his family and business.

Dec. 5. 9 o'clock. Patient comatose; skin dry; temperature of axilla 101; pulse 126, very weak; tongue dry and coated, slightly brownish; head warmer than body; extremities cool; eyes tightly closed, marked photophobia, pupils very much contracted; corners of mouth drawn down; face darkly congested; respiration laboured and very noisy; on applying the ear to the chest, the bronchial sounds were dry and metallic; the chest and abdomen were thickly covered with an eruption, consisting of small, round, reddish-brown spots about one-quarter of an inch in diameter. The patient soon began to pass his discharges in bed, entirely involuntarily. Blisters were applied behind the ears and around the back of the neck; and whiskey and oil of turpentine given internally. 11 o'clock A. M. Stupor more marked; countenance stupid, heavy, and seems indicative of pain; pulse much weaker; respiration noisier, with flapping of lips and cheeks; four cut cups applied to the neck. 2 P. M. Pulse cannot be felt in the radial artery; bronchial sounds so loud as to mask entirely all heart sounds; they are perfectly dry and metallic in character; skin is slightly moist; body has the same general appearances; the spots on the abdomen are fading. 6½ P. M. Died.

Post-mortem examination made seventeen hours after death.—Pupils natural size; the eruption has entirely disappeared from the chest and abdomen; all the dependent portions of the body hypostatically congested of a dark-brown or reddish colour.

Brain.—Vessels of pia mater, both veins and arteries, very much engorged; membranes thickened, adherent, and opaque; a large excess of a clear serous fluid in the ventricles, at the base of the brain, and within the membranes of the spinal cord. Section of the substance of the brain revealed numerous "puncta-vasculosa." The membranes of the cord were congested; no deposit of fibrin was discovered.

Lungs.—Heart, liver, spleen, kidneys, stomach, and intestines not particularly altered. Blood fluid, and of a dark muddy-brown colour.

CASE 2. Ann Ward, æt. 40, of intemperate habits, admitted December 12th. At the time was in a semi-comatose condition, but when called loudly by name, would open her eyes and turn her head slightly; face darkly congested; pupils contracted; chest, abdomen, and thighs thickly covered with a small petechial eruption, not at all raised, or disappearing on pressure; temperature in axilla 103° Fahr.; skin dry; head warmer than body; extremities cool. No "*calor mordax*," the skin feels simply warmer than natural. The patient lies in bed in any position in which she may be placed; discharges from rectum and bladder passed involuntarily; pulse entirely imperceptible. *Treatment.*—Blisters to temples and behind ears; four cut cups to back of neck; twelve dry cups along spine followed by frictions with oil of turpentine; vinum ergotæ fʒj every hour. A nurse was assigned to the patient and directed to feed her, whenever she could swallow, with a mixture of equal parts of milk and whiskey. The patient continued in this condition of stupor for seventy-two hours.

Dec. 15. 8 P. M. Begins to show some signs of consciousness; can be roused by a loud question; moves slightly in bed; the spots are beginning to fade; swallows with less difficulty; skin is cooler and more moist; a very thready pulse about 140 beats in the minute can be perceived. Ordered a mixture containing oil of turpentine ♏v, and ammon. carb. gr. v every two hours, one ounce and a half of whiskey in milk to be given every hour; discontinued the wine of ergot.

16*th*. 10 A. M. Pulse much improved, 120 to the minute; patient better in every respect; gives monosyllabic answers to questions, and notice of a desire to empty the bladder or rectum.

18*th*. 10 A. M. Pulse somewhat compressible, 90 to the minute; quite sensible, and much improved. At 3 P. M. pulse 100, bounding; face flushed; tongue coated, white; mouth dry and pasty; no delirium; dry and rude bronchial rales over chest; a white tough expectoration; whiskey reduced to half an ounce per hour. Ordered thirty ounces of beef-tea given in the twenty-four hours; blisters reapplied on temples, behind the ears, and back of neck; turpentine stupes over chest and down the spine, and a mixture of solution of acetate of ammonia and sweet spirits of nitre every hour. The febrile symptoms disappeared, and did not again recur. A large black slough which had been spreading for two or three days, on one of the nates, now showed signs of a line of demarcation; under the use of a poultice of cinchona, charcoal, flaxseed meal, and yeast, it was entirely removed in a few days, leaving an ulcer an inch and a half in depth and four inches in diameter; this was treated with a wash of creasote and carbonate of soda, and gradually filled up by granulations.

21*st*. Appetite improving, expresses a choice with regard to food; the thirst, from which she has been suffering for a few days, is abating; tongue cleaning off; bowels regular, and the feces have their proper characteristics; the face has assumed its natural appearance, the look of anxiety having all passed away; the petechiæ have entirely disappeared; pulse is hourly gaining in strength and volume; she still suffers slightly from bronchitis.

Case 3. Charles Devlin, æt. 28, blacksmith, temperate, was taken sick on Nov. 30, with general feelings of uneasiness, loss of appetite, thirst, pain in the calves of legs gradually travelling upwards through the thighs and back until it reached his head.

Dec. 9. Small petechial spots over chest, abdomen, and thighs; suffers from pains, a buzzing in head, and great muscular depression and soreness; was not able to leave his bed after this date until transferred to hospital, Dec. 14, at which time he said the pain in his head resembled the compression of a band of iron; pain and tenderness in neck and along back; mind perfectly clear, although there is a slight deafness; face wears a peculiar anxious expression; corners of the mouth are drawn down; eyelids widely open, giving the eyes a staring appearance; patient watches very narrowly the motions of his attendants, moving the eyes to keep them in view, although the head remains in one position; tongue moist, with a slight white fur, clean at tip and edges; the thirst is very marked, resembling that of cholera; pulse 102, quite weak and compressible; respiration 33; temperature in axilla 103° F.; no epistaxis; bowels regular; urine passes freely, slightly darker than usual, but remaining perfectly clear and transparent; no opisthotonos. Blisters were applied behind the ears, cut cups to temples and back of neck, and ice bags to head and spine; a mixture containing one drop of tincture of veratrum viride in acetate of ammonia given every hour, with thirty-six ounces each of whiskey and Liebig's essence of beef during the twenty-four hours.

15*th*. Temperature fallen to 101°; pulse 86 and stronger; respiration 36; three soft stools yesterday; turpentine stupes applied over abdomen.

The symptoms all yielded quickly to remedies; in forty-eight hours the pain had been relieved and the icebags were removed. The thirst was now the most marked symptom; in consequence of constantly sucking pieces of ice the tongue became brown and dry. Oil of turpentine in ♏v doses was given every two hours.

17th. Reduced the whiskey to twenty-four ounces daily.

18th. Stopped all the medicines and reduced the amount of whiskey to twelve ounces. Gave as a tonic nitro-muriatic acid, three drops, three times a day.

20th. The intolerable thirst is quite relieved; the patient is still very weak, and complains of deafness, and a constant ringing in ears; has forgotten many of the incidents connected with his sickness, such as the presence of his mother during his illness and other events which occurred during perfect consciousness.

The record of temperatures in this case shows a regular gradation from the time of his admission into the hospital until consciousness was fully established. The observations were made three times a day, 6 A. M., 12 M., and 6 P. M. The heat of body did not rise in the evening, but fell almost regularly from 103½°, which it was on the evening of the day of his admission, to 96¾°; from this point it rose again to 98° and did not again vary much.

The pulse followed the same regular course of improvement as did the temperature. The respiration continued more rapid than normal as long as he continued under observation.

Day of disease	15th		16th			17th			18th		
Time of day	10 A. M.	6 P. M.	6 A.M.	12 M.	6 P.M.	6 A.M.	12 M.	6 P.M.	6 A.M.	12 M.	6 P.M.
Respiration	33	34	36	28	32	20	28	32	28	24	24
Pulse	102	100	86	72	76	74	86	90	84	84	76
Temperature	103	103½	101	101	101	101¼	101	100½	99	98¾	98½

Day of disease	19th			20th			21st		
Time of day	6 A.M.	12 M.	6 P.M.	6 A.M.	12 M.	6 P.M.	6 A.M.	12 M.	6 P.M.
Respiration	28	28	28	28	28	32	32		
Pulse	76	66	70	80	78	86	72		
Temperature	97	96¾	96¾	97	98	98½	97½		

CASE 4. Edward Green, æt. 36; intemperate habits. First felt unwell December 7, with loss of appetite; great thirst; slight diarrhœa (five passages daily, small, but thin and dark-coloured); occasional vomiting of bilious matter, with pain commencing in back, and progressing upwards towards the head.

Dec. 13. Admitted into hospital, in a state of intense nervous excitement; a universal tremor pervading the whole body; tongue tremulous when extruded; pain in head described as very intense, and located in the occipital and temporal regions. Complains of being unable to sleep day or night; pupils small; conjunctiva injected; whole eye prominent and staring; slight hyperæsthesia of skin; pulse 126, moderately full, but compressible; respiration 36, very irregular; temperature in axilla 103°; abdomen, chest, and thighs thickly covered with a reddish-brown petechial eruption.

Treatment.—℞. Tr. verat. vir. gtt. l; spts. æth. nit. f℥j; liq. ammon. acetat. f℥v.—M. Sig.—f℥j every hour. Oil turpentine ♏v every hour; blisters behind the ears; cut-cups to temples; three cut-cups to back of neck; twelve dry cups along spine; warm chamomile tea, and a hot-air bath by means of slaking lime in the bed; thirty-six ounces each of Liebig's essence of beef, and whiskey, were given during the twenty-four hours.

During the first five days of treatment the result in this case was very doubtful; the pulse became more frequent and irregular, and less in volume, until it numbered 140 beats to the minute, and could be perceived with difficulty. The respiration continued frequent; the temperature varied between 101° and 103°, always rising towards evening. Each afternoon, from four to seven o'clock, the stomach could retain neither food nor medicine. It became necessary to draw off the urine by means of the catheter; the bowels continued to act regularly. On the twelfth day of the disease the first improvement was noticed in the strength of the pulse; and the stomach became more retentive. On the 13th the pulse had fallen to 106 beats in the minute. The temperature still continued high. At noon on the thirteenth day it stood at 103¼°, but from this point it fell regularly, keeping pace with the general progress towards convalescence. By the sixteenth day of the attack, convalescence may be said to have fully commenced. The thick white fur had cleaned off from the tongue; the appetite was improving, and all signs of cerebral irritation had been relieved, with one exception—the patient was very deaf, and continued so for some weeks after all other sequelæ of the disease had vanished.

Day of disease	7th		8th			9th			10th		
Time of day	10 A. M.	6 P. M.	6 A.M.	12 M.	6 P.M.	6 A.M.	12 M.	6 P.M.	6 A.M.	12 M.	6 P.M.
Respiration	36	28	24	28	28	32	36	32	40	28	36
Pulse	126	112	116	128	116	126	130	128	134	134	136
Temperature	103	103	101½	101	103	102	102	102½	102	100½	101½

Day of disease	11th			12th			13th			14th		
Time of day	6 A.M.	12 M.	6 P.M.	6 A.M.	12 M.	6 P.M.	6 A.M.	12 M.	6 P.M.	6 A.M.	12 M.	6 P.M.
Respiration	28	32	32	36	36	36	32	32	36	32	36	24
Pulse	140	140	120	132	136	140	106	120	120	106	108	112
Temperature	101½	101	101½	101½	102	102¾	102	103¼	102	100½	101½	101

Day of disease	15th			16th		
Time of day	6 A.M.	12 M.	6 P.M.	6 A.M.	12 M.	6 P.M.
Respiration	24	28	32	24	24	20
Pulse	92	108	92	100	110	96
Temperature	101	98½	99½	99½	97½	98½

CASE 5. Edward Davis, æt. 43; intemperate; admitted into hospital December 18. Complains of general *malaise;* pulse weak; expression stupid and heavy; petechial mottling on abdomen and thighs; no headache or pain in neck or back, or tenderness on pressure anywhere; no diarrhœa or constipation, or nausea, or epistaxis; free discharge of urine, normal in appearance. *Treatment.*—Blisters behind ears; stimulation with whiskey and oil of turpentine, and a good diet; and tinct. verat. vir. gtt. j every hour.

The symptoms of the disease were not well marked in this case, and no trouble was anticipated. Everything promised well for the first four days, when, perhaps in consequence of some nervous irritation, on Saturday, December 22d, the symptoms became more serious.

Dec. 23. Decided opisthotonos; pupils contract and dilate unequally; discharges from rectum and bladder involuntary; muttering delirium; tongue coated, white, and soft; general hyperæsthesia of surface. Applied cut-cups to temples and back of neck, and dry cups to spine. Reapplied blisters behind ears and around neck, and applied ice-bags to head and spine; increased the amount of whiskey to thirty-six ounces daily. At noon answered with difficulty when spoken to in a loud tone; occurrence of nausea and vomiting; hands and feet becoming cool. Employed hot-air bath by means of lime.

24th. Opisthotonos continues; stupor more marked; temperature fallen to 92°; swallows with less difficulty. Used artificial warmth, and stimulation with oil of turpentine and aromatic spirits of ammonia.

Noon—Respiration very noisy; flapping of lips and cheeks; pulse almost imperceptible. Throughout the entire course the pulse could with great difficulty be counted. At 5 P. M. the patient died on seventh day of the disease.

Day of disease	3d			4th			5th			6th		7th
Time of day	6 A. M.	12 M.	6 P. M	6 A. M.	12 M.	6 P. M.	6 A. M.	12 M.	6 P. M.	12 M.	6 P. M.	6 A. M.
Respiration	28	32	28	24	24	24	20	24	28	28	24	24
Pulse	124	130	132	112	120	128	110		100	104	112	102
Temperature	98	100	101½	99½	100½	99	99	98	99	98½	96	92

Case 6. John T. Davis, æt. 52; intemperate; admitted into hospital December 20, with general typhoid symptoms; slight diarrhœa; faintly marked petechial eruption; temperature 103¾°; pulse 120; respiration 40; face wearing the peculiar anxious expression previously described; eyes prominent and staring, and corners of mouth drawn down; a few rude and moist rales in various parts of chest. *Treatment*—Tinct. of iodine rubbed over chest; blisters behind ears; slight stimulation and nourishing food.

Dec. 22. The patient disturbed by the accident mentioned in Case 5. In the afternoon showed increasing febrile symptoms; tongue became dry and coated.

23d. Active delirium set in toward evening; the patient continued talking wildly all night.

24th. Cut-cups to temples and back of neck; blisters renewed behind ears and around neck; ice-bags to head and spine; whiskey increased to 36 ounces.

25th. The symptoms very much ameliorated, but to-night the patient seems weaker; extremities cool; temperature in axilla 101½°; pulse 142; directed artificial warmth to extremities, and an additional 8 ounces of whiskey during the night.

26th. Patient seemed much better this morning; the head symptoms all disappeared; perfectly rational; temperature 100; pulse 112. In the afternoon the pulse and respiration increased in rapidity. The eyes became lustreless from the stoppage of the lachrymal secretion. At 7 P. M. pulse could not be felt in the radial artery, nor the heart-sounds be heard by auscultation. At 9 P. M. the patient died.

Day of disease	3d	4th		5th		6th		7th		8th	
Time of day		6 A.M.	6 P.M.	6 A.M.	6 P.M.	6 A.M.	6 P.M.	6 A.M.	6 P.M.	6 A.M.	6 P.M.
Respiration	40	36	40	32	40		48	28	32	48	52
Pulse	120	108	120	104	120	98	98	86	142	112	152
Temperature	103½	101½	102½	101½	101½		101	101	101½	100	100

The post-mortem examinations of several cases revealed marked evidences of blood-poison, with inflammatory tendency. The membranes of the brain were congested; there was serum in large quantity in the subarachnoidean spaces, at the base of the brain, and within the membranes of the spinal cord. Fibrin was deposited along the margins of the longitudinal fissure of the brain, about the commissure of the optic nerve; in fact, freely all over the base of the brain; and in one case it could be separated in masses weighing from three to five grains, from within the fissure of Sylvius, where it had firmly glued the two surfaces together. The quantity of this deposit of fibrin, its colour, consistence, and strength of attachment, were influenced chiefly by two causes observed during life. In some cases, where the inflammatory symptoms were of an active character, as shown by the congestion of face and eyes, the character of the pulse, and the violence of the delirium, death occurred early; and an autopsy showed little or no deposit of solid lymph, but a large quantity of serum, and in one case pus, in all the serous cavities connected with the brain and spinal cord, with turgescence of all the vessels of the pia mater and nervous substance. If, on the other hand, death did not intervene so quickly, there were deposits of fibrin, becoming larger, firmer, and more adherent in proportion to the grade of inflammatory action, and the time allowed for its coagulation. These deposits were of the same character as those found in the cavity of the abdomen after an attack of peritonitis. No particular lesion of the cord itself was noticed, the membranes were congested, and there were small deposits of fibrin about the roots of the spinal nerves. The erector-spinæ muscles were darker than normal, and softened. The blood was fluid; of the colour and appearance of port-wine lees; under the microscope, the corpuscles were shrivelled and crenated, and there was a space apparent between them as they were arranged in rouleaus. There were, in two cases, white, firm, fibrinous heart-clots extending through both ventricles and auricles, and into the vessels leading to and from the heart.

CASE 7. Julia Dillon, æt. 21, was delivered at full term, Jan. 25, 1867, by means of forceps, by Dr. Schofield. There were some slight symptoms of peritonitis, and the customary dose of castor-oil was withheld, and opium given to lock up the bowels. Jan. 29 it became necessary to draw off her water by means of the catheter.

Jan. 30. An eruption of an erythematous nature, appearing on the chest, with a distinct eruption of darker hue on abdomen and thighs, not disappearing entirely on pressure, with sloughing of the perineum; she was transferred to the surgical wards. She complained of pain in the head and in lower part of the abdomen; the latter was not very acute, and she bore considerable pressure with the finger without complaining; no pain or tenderness in neck or back, or stiffness of muscles anywhere; some slight emesis of matters of a greenish colour, thin, with coagulated milk and egg, which had been given her; pulse 130, quick and weak; slight but continual thirst, which water would not relieve; no heat of skin; hands slightly moist; pupils somewhat contracted, but eyelids very widely opened. *Treatment.*—Castor-oil and an injection to open bowels; frictions with hot oil to breasts to favour secretion of milk (the mammary glands were perfectly soft and flaccid, there had been no appearance either of milk or of the lochia); neutral mixture with sweet spirits of nitre, and poultices and hot water cloths over hypogastric and femoral regions to favour the discharge of urine and the lochia. During the afternoon four passages from bowels were obtained, with a free secretion of urine; patient expressed herself as being much relieved; the pain had left her head entirely and the sense of fulness and weight in the abdomen was lessened. The pupils were still contracted, although no more opium had been given; there was tenderness over region of uterus and ovaries. Soon after midnight a hemorrhage, of about sixteen ounces, from uterus, occurred; this ceased without recourse to remedial agents, and relieved all remaining symptoms of peritonitis; the eruption still remained; if changed at all, it had become darker.

31*st.* Morning: Says she is more comfortable now than at any time since her delivery; has no pain or uneasiness anywhere, but there was occasional vomiting, and continued thirst; the applications to breast and hypogastric regions were still continued. At 3 P. M. complained of slight shifting pains in the lower part of abdomen and in both hypochondriac regions. At 10 P. M. signs of cerebral disturbance; abdomen swelled and somewhat tympanitic, but not very tender on pressure; neither milk nor lochia had yet appeared; tongue broad and slightly coated with white fur; pain in the head with general uneasiness and vomiting. The neutral mixture, which seemed to excite nausea, was stopped; a blister placed over stomach and suppositories, containing three grains of opium, were administered every four hours.

Feb. 1. 10 A. M. Semi-comatose; evidently suffering great pain; face darkly congested; pupils contracted; mouth dry and pasty; body bearing same marks as previously noted; bowels have not been opened since the operation by the purgative, thirty hours since; pulse quick, about 150 beats to the minute. Blisters were placed behind neck and over fundus of uterus. Later in the morning the coma deepened; the eyes became dry and rolled upwards; the patient recognized no one, and could not be roused by calling her name or by opening her eyes; remedies gave no relief; at 3 P. M. she died.

Post-mortem examination, eighteen hours after death, revealed effusion of serum within membranes of brain and spinal cord; deposit of fibrin along longitudinal fissure; congestion of the membranes and of the brain itself; softening of the brain substance; effusion of serum in pericardial sac; post-mortem clots in right ventricle; effusion of about sixteen ounces of serum into cavity of abdomen with deposit of coagulated fibrin in small amount on uterus, ovaries, and descending colon; this deposit was but slightly adherent; peritoneum whitened; intestines and stomach distended with gas; liver, lung, and kidneys healthy; mucous lining of vagina and neck of uterus with portions of labia and perineum had sloughed; blood dark in colour, and but partially coagulated.

Case 8. Charles McCaskey, æt. 51; intemperate; from the city. Headache very severe. Admitted with a severe chill, profuse petechial eruption on face, chest, arms, legs, and back; large bed-sores; morbid vigilance, ending in coma; subsultus tendinum lasting for a week; bowels constipated; slight bilious vomiting; severe pains in neck, back, and limbs; strongly marked opisthotonos; excessive general hyperæsthesia; conjunctiva deeply congested, with photophobia and a secretion of pus; thirst insatiable; tongue pointed, dry, cracked, and tremulous, but coated with a thick, tenacious mucus; pulse small and feeble, varying from 120 to 150. Temperature max. 102¾°, min. 97½°—mean 100°. No complications, and whole time twenty-eight days. Sequelæ almost complete deafness and paralysis of left foot.

Case 9. Jacob Freiley, æt. 45; intemperate; from out-wards. Headache very severe; slight delirium; bowels constipated; slight bilious vomiting;

muscular pains in neck and back; opisthotonos moderate; hyperæsthesia general; no eruption; marked congestion of the conjunctiva; insatiable thirst; tongue coated with a soft white fur, but clean at tip and edges; pulse strong and irritable, varying from 116 to 120. Temperature max. 105°, min. 101½°, mean 103°. Complicated with bronchitis. Duration of prodromes five days. Death on twelfth day from choking up of bronchial tubes with thick mucus.

CASE 10. John O. Donnell, æt. 35; temperate; from city. Violent headache; no delirium; constipation; severe and general muscular pains; eruption of erythema and urticaria; slight congestion of conjunctiva; thirst severe; tongue coated, white, and soft; clean at tip and edges; pulse 96 to 62, quite feeble; temperature from 99° to 99½°. No complications. Duration of prodromes five days; whole time sixteen days. The active symptoms were anticipated by local depletion, and the case aborted.

CASE 11. Arthur Dalton, æt. 30; temperate; ward assistant. Violent headache; slight delirium; diarrhœa; general petechial eruption; conjunctiva very much congested; thirst slight, but constant; tongue dry and brown; pulse 88 to 134, barely perceptible. Temperature max. 104½°, min. 97¾°, mean 102⅓°; twelve days of prodromes. Died on twenty-third day. For the first fortnight this case had all the symptoms of well-marked typhoid fever, with the exception of the eruption, which was petechial in character from the first. Stupor and coma were constant for several days before death.

CASE 12. George Chambers, æt. 45; temperate; from city. Violent headache; no delirium; diarrhœa; severe and general muscular pains; no eruption; conjunctiva congested; thirst severe; tongue coated with white soft fur, clean at tip and edges; pulse 62 to 80. Temperature 99°; five days of prodromes; whole time eight days; aborted by treatment early; sequela deafness.

CASE 13. Mary Peterson, æt. 45; temperate; an inmate of the insane department for twelve years. No communication with any other case. First noticed in a collapse of three hours' duration. Symptoms were congestion of eyes; the right pupil contracted, the left dilated, and appeared to dilate more under influence of light. Coma, with laboured, stertorous respiration; apparently severe headache; constipation; no eruption; tongue coated with thick white fur, clean at tip and edges. Lips were dry and cracked; pulse varied from normal to 180; very feeble; skin hot and dry. Died in forty-three hours. Post-mortem examination revealed very extensive deposits of fibrin at base of brain; about five ounces of serum at base of brain; spinal cord congested, with deposit of fibrin beneath the arachnoid. A small quantity of pus around the cord in the cervical region.

CASE 14. Robert Bartlett, æt. 26 (coloured). Severe headache; alternate diarrhœa and constipation; nausea; slight opisthotonos, with subsultus; slight hyperæsthesia over abdomen; conjunctiva much congested; intense thirst; tongue at first white, soft fur with clean tip and edges; fur afterwards became dry and brown; pulse feeble, 86 to 72. Temperature max. 102½°, min. 98°, mean 101°. Complicated with bronchitis. Twelve days of prodromes; convalescent in eighteen days.

CASE 15. Henry Washington (coloured), æt. 22; temperate; from out-wards. Severe headache; talkative delirium; constipation; bilious vomiting; muscular pains in arms and legs; back of neck stiff and sore; slight opisthotonos; no eruption; marked congestion of conjunctiva, with suffusion; intense thirst; tongue coated with moist white fur, clean tip and edges; pulse 96 to 120, feeble. Temperature max. 104¾°, min. 97½°, mean 102. Complicated with pneumonia of right side; seven days of prodromes. Died on twenty-first day, of exhaustion. Post-mortem examination of brain and cord showed results of high inflammatory action.

CASE 16. George Brown (coloured), æt. 20; temperate; from city. Moribund when brought into hospital. No history obtained. Constipation; great congestion of conjunctiva; insatiable thirst; tongue coated with white soft fur, clean tip and edges; feeble pulse 110 to 120. Temperature 101° to 103°. Complicated with double pneumonia and free epistaxis. Although no symptoms of meningitis could be detected, with the exception of the peculiar expression of countenance, yet large quantities of lymph were found along the longitudinal sinus, and at the base of the brain, with considerable arachnoidean effusion.

CASE 17. Alfred Johnson (coloured), æt. 23; from prison. In medical ward three days. Severe headache; walking and talking delirium; constipation; slight opisthotonos; conjunctiva slightly congested; slight thirst; tongue dry and brown; pulse feeble, 100 to 110. Temperature 101°. Died on the eighth day of disease. Marked deposits of fibrin.

CASE 18. Robert Nickerson (coloured), æt. 45; temperate; from Seventh and Bedford Streets. Severe headache: talkative delirium; constipation; bilious vomiting; muscular pains were unusually severe; marked opisthotonos, body forming an arch; subsultus tendinum; general hyperæsthesia, screaming when touched; pain on pressure along entire length of vertebral column; conjunctiva congested; thirst intense; tongue dry and brown; pulse 110 to 130, very feeble. Temperature 101°. Four days' prodromes. Died on the eleventh day.

CASE 19. William Smith (coloured), æt. 35; temperate; from prison. Slight headache; constipation; muscular pains in the neck with stiffness of back; slight hyperæsthesia; conjunctiva slightly congested; severe thirst; tongue coated with moist white fur, clean at tip and edges; pulse 76 to 112, very feeble. Temperature 100°; two days' prodromes; whole time seven days. Aborted by early treatment.

CASE 20. John Cook (coloured), æt. 22; temperate; from the city. Severe headache; constipation; muscular pains in neck and back, with stiffness of legs and back; slight hyperæsthesia; marked congestion of conjunctiva; severe thirst; tongue moist, white fur, clean at tip and edges; pulse 76 to 104, feeble. Temperature 99°. Complication, pharyngitis. Ten days' prodromes; convalescent on fourteenth.

CASE 21. Richard Eddy (coloured), æt. 42; intemperate; from the city. Slight headache; constipation; bitter taste in mouth; pain on pressure over sixth cervical and second dorsal vertebræ; decided congestion of conjunctiva; slight thirst; tongue coated with moist white fur, and clean tip and edges; pulse 76 to 112, quite feeble. Temperature 100°. Duration five days; aborted by treatment.

CASE 22. Charles Donald, æt. 58; intemperate; from out-wards. Wild delirium; severe headache; constipation; nausea, general muscular pains; decided opisthotonos; eruption of erythema and petechiæ; marked congestion of conjunctiva; severe thirst; tongue dry and brown; pulse 74 to 130; temperature 101½°. Died on the twelfth day.

CASE 23. George Parker, æt. 24; temperate; from out-wards. Headache intense; bowels constipated; muscular pains in neck and back; slight opisthotonos; slight but general hyperæsthesia; petechial eruption; marked congestion of conjunctiva; severe thirst; tongue dry and brown, with red tip and edges; pulse 92 to 146; temperature 98° to 103½°; repeated epistaxis; eight days of prodromes; duration of attack fourteen days.

CASE 24. Louis Missing, æt. 26; temperate; was in the ward ten days. Comatose the whole time; bowels constipated; slight muscular pains in the neck; marked opisthotonos; slight but general hyperæsthesia; no eruption; marked congestion of conjunctiva; tongue dry, brown, and fissured; pulse 98 to 140; temperature 96° to 104°. Died.

CASE 25. John Davis, æt. 54; intemperate; from prison. Headache intense; bowels constipated; muscular pains in legs and arms; decided opisthotonos; hyperæsthesia marked over abdomen; pain on pressure over entire vertebral column; petechial eruption; conjunctiva congested; intense thirst; tongue dry and brown; pulse imperceptible; temperature 103°. Died in thirty-six hours after admission.

CASE 26. John Anderson, æt. 21; temperate; from the city. Slight delirium; slight headache; constipation; bilious vomiting; marked opisthotonos; slight hyperæsthesia; no eruption; conjunctiva congested; slight thirst; tongue coated with a moist white fur with clean tip and edges; pulse 72 to 112; temperature 97° to 104½°; profuse epistaxis; complicated by a relapse. Three days of prodromata; convalescent in twenty-seven days.

CASE 27. Peter Carney, æt. 20; temperate; from city. Severe headache; constipation; stiffness of back; slight hyperæsthesia; erythematous eruption; congestion of conjunctiva; intense thirst; tongue coated in centre with soft white fur, clean at tip and edges; pulse 72 to 106; temperature 96° to 104°; slight epistaxis; convalescent on fifteenth day; five days of prodromes.

CASE 28. John Hart, æt. 44; intemperate; from prison. Slight delirium; continued intense headache; constipation; muscular pains in limbs; decided opisthotonos, with continued stiffness; eruption slightly petechial; marked congestion of conjunctiva; intense thirst; dry glazed tongue; pulse 88 to 112; temperature 98° to 101°; repeated epistaxis; convalescent in eight days.

CASE 29. Edward Shields, æt. 26; intemperate; from city. Active delirium; severe headache; constipation; bilious vomiting; muscular pains in limbs and back; slight hyperæsthesia; an erythematous eruption; slight congestion of conjunctiva; slight thirst; tongue coated with moist white fur, clean at tip and edges; pulse 86 to 120; temperature 97° to 103°; complicated by delirium tremens; convalescent on fourteenth day.

CASE 30. Hugh Finnegan, æt. 21; temperate; from the city. Muttering delirium; severe frontal headache; constipation; muscular pains in neck; marked opisthotonos; slight hyperæsthesia; eruption of erythema and petechiæ on face only; marked congestion of conjunctiva; intense thirst; tongue coated with moist white fur, but clean at tip and edges; pulse 68 to 120; temperature 97° to 104°; convalescent on seventeenth day.

CASE 31. William Smith, æt. 67; temperate; from city. Slight headache; constipation; eruption of erythema and petechiæ; marked congestion of conjunctiva; severe thirst; tongue coated with moist white fur, clean tip and edges; pulse 76 to 120; temperature 97° to 102°; convalescent on tenth day; convalescence rapid; but the deafness was quite persistent.

CASE 32. Richard Healy, æt. 22; temperate; ward assistant. Talkative delirium; severe headache; constipation; bilious vomiting; slight muscular pains; slight opisthotonos; marked hyperæsthesia; pain on pressure over seventh dorsal vertebra; eruption of erythema and petechiæ, appeared on sixth day; marked congestion of conjunctiva; intense thirst; dry and brown tongue; pulse 72 to 120; temperature 96° to 104½°; epistaxis profuse; convalescent on twentieth day.

CASE 33. Henry Sinclair, æt. 17; temperate; from surgical wards. Severe headache; constipation; bilious vomiting; muscular pains in neck and back; marked and general hyperæsthesia; no eruption; slight congestion of conjunctiva; slight thirst; tongue coated with moist white fur, but clean at tip and edges; pulse 76 to 126; temperature 97° to 103°; aborted by treatment; convalescent on fifth day.

CASE 34. Anthony Thomas, æt. 46; from city. Severe headache; constipation; muscular pains in neck and back; marked and general hyperæsthesia; petechial eruption; slight congestion of conjunctiva; slight thirst; tongue coated with moist white fur, but clean at tip and edges, afterward dry and brown; pulse 125; died on third day after admission.

CASE 35. John McGinnis, æt. 30; temperate; from city. Intense headache; constipation; bilious vomiting; muscular pains in neck and limbs; marked opisthotonos; marked hyperæsthesia; pain on pressure over second and third dorsal vertebræ; petechial eruption; marked congestion of conjunctiva; intense thirst; tongue coated with moist white fur, clean at tip and edges; pulse 80 to 120; temperature 97° to 103°; epistaxis; convalescent on twenty-second day, with deafness.

Case 36. James Cox, æt. 36; intemperate; from out-wards. Constipation; bilious vomiting; general muscular pains; slight hyperæsthesia; pain on pressure over sixth dorsal vertebra; eruption of erythema and petechiæ; slight congestion of conjunctiva; intense thirst; dry and brown tongue; pulse 112 to 120; temperature 94° to 104°; incontinence of urine; profuse epistaxis; death in convulsions on eleventh day.

Case 37. John Greiner, æt. 46; temperate; a paralytic. Slight headache; constipation; muscular pains in back of neck; slight petechial eruption; slight congestion of conjunctiva; intense thirst; dry and brown tongue; pulse 68 to 96; temperature 97° to 105¼°; convalescent on eighth day, with sequelæ of carbuncles.

Case 38. Mary Asholder, æt. 23; temperate; from out-wards. Talkative delirium with inclination to leave her bed; severe shooting headache; constipation; bilious vomiting; muscular pains in neck and body; marked opisthotonos; slight hyperæsthesia; petechial eruption; marked congestion of conjunctiva; insatiable thirst; tongue moist, white, &c., but afterwards dry and brown; pulse 102 to 120; complicated with double pneumonia and pericarditis; convalescent on thirteenth day, with quite persistent deafness.

Case 39. Thomas Hanley, æt. 22; from venereal ward. Heavy and dull, but no delirium; severe frontal headache; bowels regular; nausea, but no vomiting; muscular pains in limbs and neck; pain on pressure over third dorsal vertebra; eruption of urticaria on seventh day with petechiæ; conjunctiva injected; thirst severe; tongue coated with moist white fur, but red at tip and edges; pulse 70 to 106; temperature 97° to 104°; convalescent on fourteenth day.

Case 40. Francis Hagen, from city. Sent to drunkards' ward. Stupid throughout the day, but delirium active at night; ataxic symptoms well marked; severe frontal headache; vomiting during the first two or three days; muscular pains in legs, body, and neck; opisthotonos quite marked; petechial eruption; conjunctiva injected; thirst severe; tongue coated, white, and soft at first, afterwards dry, brown, and fissured; pulse 80 to 130; temperature 99° to 104°; complicated by delirium tremens, consequent on a long debauch. Convalescent on fourteenth day, with annoying deafness and stiffness of legs.

Case 41. Michael Harkins, æt. 21; from Second and South Streets. This case was exceedingly difficult to distinguish from typhus; there were at the time no cases of typhus reported from the city. The condition of intellect resembled typhus; headache continuous; some diarrhœa during attack; vomiting at commencement; slight muscular pains; petechial eruption; eye natural; thirst slight; tongue at first red, with white edge, becoming dry and cracked; pulse 72 to 120; temperature 96° to 104½°; complicated with circumscribed pneumonia coming on in the second week. Convalescent on twentieth day.

Case 42. Michael Rodman, æt. 31; from northern suburbs of city. Heavy and soporose through the day, but noisy at night; headache very severe; constipated at commencement of attack; muscular pains in limbs and back of neck; stiffness of back; petechial eruption; eye injected; thirst severe; tongue at first red and soft, but afterwards dry and brown; pulse 90 to 120; temperature 99° to 104½°; complicated by delirium tremens. Convalescent in four weeks. An obstinate dull aching pain remained in forehead; relieved by blisters and potass. iodidi, but not entirely disappearing; deafness and loss of memory.

Case 43. William Brown, æt. 13; from Seventh and Bedford Streets. Intelligence good at first, delirium and coma afterwards; severe headache; bilious vomiting; muscular pains severe in legs; petechial eruption; eye injected; thirst severe; tongue red and soft at first, afterwards dry and brown; pulse 120 to 140; temperature 100° to 104½°; complicated with scrofulous diathesis; white swelling of knee. In this case a true exanthem, disappearing wholly under pressure, preceded the petechial eruption. Death on the tenth day by sudden collapse.

CASE 44. William Mitchell, æt. 27; from Seventh and Bedford Streets. Had been on a debauch; active delirium at night; severe frontal headache; diarrhœa; muscular pains in legs: severe pain in neck; petechial eruption; eye injected; thirst severe; pulse 90 to 120; temperature 98° to 103°; complicated with bronchitis. Convalescent in three weeks, with deafness and loss of memory.

CASE 45. Gustav Martin, æt. 30; from Front and Brown Streets. Delirium in second week; severe frontal headache; diarrhœa at first; muscular pains severe in neck, back, and legs; slight opisthotonos; copious eruption: exanthem changing to petechia; eye congested; constant and distressing thirst; tongue becoming dry and brown and bleeding; pulse 120; temperature 97° to 103°; Convalescent in four weeks; deafness, loss of memory, and deep sloughing bedsores.

CASE 46. Henry Murphy, æt. 21; from Wheeling. Had felt unwell before leaving there; spent one night in a station-house and then came to the hospital; slight nocturnal delirium; severe frontal headache; diarrhœa; bilious vomiting; muscular pains, especially in neck; could not flex the head so as to touch the chin to the breast; slight hyperæsthesia; copious petechial eruption; injected eye; slight thirst; tongue dry, brown, and bleeding; pulse 80 to 120. Convalescent in four weeks, with deafness and loss of memory.

CASE 47. William Riggs (coloured), æt. 25; from Fifth and South Streets. Noisy at night; frontal headache; diarrhœa; bilious vomiting; muscular pains, especially in the neck; pain in putting chin to breast; eye injected; slight thirst; tongue brown, dry, and bleeding; pulse 136; temperature 98° to $104\frac{3}{4}$°. Convalescent in three weeks.

CASE 48. John Robinson (coloured), æt. 27; from prison. Slight delirium; severe headache; constipation; obstinate bilious vomiting; muscular pains, with syphilitic osteocopic pains, making it difficult to decide which were caused by the disease; eye injected; tongue red and moist through attack; pulse 100; was ptyalized before admission. Convalescent in three weeks.

CASE 49. John O'Neill (coloured); from out-ward. Talkative at night; severe headache; nausea; pain in neck and stomach; eye congested; slight thirst; tongue dry and yellow; temperature $97\frac{1}{2}$° to 102°; convalescent in three weeks. The parotid glands were inflamed and suppurated; the right opened spontaneously into the ear; the left was lanced—very free discharge; deafness.

CASE 50. Samuel Green (coloured); temperate; from Sixth and Lombard Streets. Frontal headache; severe pain in neck; eye congested; slight thirst; tongue dry and coated; pulse 120, soft and compressible. An abortive attack, entirely convalescent in three weeks.

CASE 51. John Brown, from Bedford Street. Frontal headache; pains in head, back, shoulders, and legs, and on pressure over third dorsal vertebra; eye injected; slight thirst; dry tongue; pulse 120. Convalescent in three weeks.

CASE 52. John Carter, æt. 20; from Bedford Street. Slight delirium, and headache; general muscular pains, especially in neck; slight opisthotonos; eyes injected; slight thirst; tongue dry and brown. Convalescent in three weeks, with deafness, and purulent discharge from both ears.

CASE 53. Margaret Hall, æt. 29; temperate; from Kensington. Slight headache; constipation; bilious vomiting; muscular pains in limbs, back, and neck; an eruption of erythema and petechiæ; conjunctiva highly congested; severe thirst; tongue moist, brown, fur on edges, clean in centre; pulse 80 to 130. Convalescent on sixteenth day.

CASE 54. Mary Gibson, æt. 61; temperate; from out-wards. Slight muttering delirium; severe headache; diarrhœa; neck stiff and sore; slight opisthotonos;

slight and general hyperæsthesia; petechial eruption on face, body, and upper extremities; eyes slightly congested; intense thirst; tongue dry and brown, with clean edges; pulse 88 to 104. Convalescent in fifteen days.

Case 55. Cecelia Bee, æt. 40; temperate; from Eighth and Fitzwater Streets. Wild, raving delirium; slight headache; constipation; muscular pains in neck, arms, and legs; eruption of erythema and petechiæ; slight congestion of conjunctiva; around cornea of right eye, beneath the conjunctiva, occurred a large effusion of blood, disappearing during convalescence; intense thirst; tongue soft, with white fur, clean at tip and edges; bitter taste in mouth; pulse 88 to 110; complicated with pneumonia of right side. Convalescent on twenty-sixth day, with persistent deafness.

Case 56. Margaret Somerville, æt. 27; temperate; from out-wards. Intense, constant headache; constipation; bilious vomiting; muscular pains all over, but intense in neck; slight opisthotonos; slight petechial eruption; marked congestion of conjunctiva; insatiable thirst; tongue coated with soft white fur, but clean at tip and edges; pulse 96 to 100. Convalescent on seventeenth day.

Case 57. Ann Danlan, æt. 40; temperate; from Ninth and Cherry Streets. Headache severe in forehead and top of head; constipation; pain in back and extremities; slight hyperæsthesia; eruption of erythema and petechiæ; marked congestion of conjunctiva; insatiable thirst; tongue coated with soft white fur, but clean at tip and edges; pulse 80 to 112. Convalescent in twenty days.

Case 58. Mary Albright, æt. 37; intemperate; from out-wards. Muttering delirium; slight headache; constipation; muscular pains severe and general; slight opisthotonos; petechiæ on body and thighs; slight congestion of conjunctiva; insatiable thirst; tongue dry, brown, and fissured; pulse 80 to 120. Convalescent on twelfth day, with deafness.

Case 59. John Pfaust, æt. 42; from Germantown Road. Wild, raving delirium; severe headache; constipation; bilious vomiting; muscular pains in back and limbs; slight hyperæsthesia; decided congestion of conjunctiva; intense thirst; tongue brown and pasty; pulse 80 to 130. Convalescent on eighteenth day.

Case 60. Jesse Howard, æt. 42 (coloured); temperate; from out-wards. Stupid, but neither coma nor delirium; severe headache; constipation; sore throat; muscular pains in neck, back, and limbs; marked opisthotonos; slight hyperæsthesia; pain on pressure along entire vertebral column; marked congestion of conjunctiva; intense thirst; tongue dry and brown; pulse 100 to 125. In ward four days; died in convulsions.

Case 61. Charles Brown (coloured); temperate; from out-wards. Severe headache; constipation; muscular pains in limbs; pain on pressure over seventh dorsal vertebra; conjunctiva highly congested; insatiable thirst; tongue coated with soft, white fur, cleanest at tip and edges; pulse 80 to 125. Convalescent on tenth day.

Case 62. Jas. McGowan, æt. 35; intemperate; from prison. Stupid; severe headache; constipation; profuse petechial eruption; marked congestion of conjunctiva; intense thirst; brown, dry tongue; pulse 76 to 129. Complicated with pleuro-pneumonia of right side; very much prostrated at time of admission; died two days afterwards.

Case 63. William McAllister, æt. 63; temperate; from out-wards. Slight headache; alternate constipation and diarrhœa; muscular pains in limbs and back; slight petechial eruption; marked congestion; slight thirst; brown, dry tongue; pulse could not be felt; complicated with double pneumonia. Death on ninth day. Brain lesions were very marked in this case; large masses of closely adherent lymph at base of brain and on medulla oblongata.

Case 64. Mary Bunting, æt. 52; intemperate; from out-wards. Severe headache; constipation; bilious vomiting; general and severe muscular pains; slight hyperæsthesia; pain on pressure over cervical vertebræ; petechial eruption;

marked congestion of conjunctiva; intense thirst; brown and dry tongue; pulse could not be felt. Entered the ward in collapse; died.

CASE 65. Annie Fitzgerald, æt. 20; temperate; from out-wards. Coma; severe headache; muscular pains in back; pain on pressure over dorsal vertebræ; conjunctiva slightly congested; thirst intense; tongue dry, brown, and furrowed in centre, but clean at edges; pulse 90 to 160. Skin hot and dry just before death; complicated by pneumonia of right side pre-existing, and puerperal convulsions. Puerperal convulsions set in on the day she was delivered, continuing for four days, with twenty-six distinct exacerbations—changing on the fourth day into a comatose condition, lasting for three days; she again became partially conscious the day before that on which she died. Death by exhaustion on eighth day. *Autopsy* revealed large quantities of tough, adherent lymphy deposits at base of brain.

CASE 66. Mary E. Richardson, æt. 36; intemperate; from Sixth and Shippen Streets. Chill; intense headache; constipation; bilious vomiting; muscular pains in neck, back, and limbs; slight opisthotonos; slight hyperæsthesia; pain on pressure along entire vertebral column; eruption of erythema and petechiæ; marked congestion of conjunctiva; intense thirst; tongue coated with soft white fur, changing to brown, and dry; pulse 80 to 130. Complicated with bronchitis and bed-sores. Convalescent in fourth week.

CASE 67. Samuel Mellon, æt. 40; intemperate; from Sixth and Shippen. Chilly creeping; severe headache; constipation; muscular pains in limbs and neck; eruption of petechia and erythema; marked congestion of conjunctiva; intense thirst; tongue white and soft, becoming dry and brown; pulse 88 to 120. Convalescent in fourth week.

CASE 68. Jacob August, æt. 40; intemperate; from Seventh and Bedford. Severe headache; constipation; bilious vomiting; slight muscular pains in limbs and back; slight opisthotonos; slight hyperæsthesia; pain on pressure over cervical vertebræ; petechial eruption; marked congestion of conjunctiva; intense thirst; tongue white and soft, becoming dry and brown; pulse 84 to 125. Convalescent in fourth week.

CASE 69. Michael McGinity, æt. 47; temperate; from Scranton, Pa. Was taken sick at Scranton, prodromes lasting ten days. Severe headache; constipation; bilious vomiting; muscular pains in limbs and neck; eruption of erythema and petechia; marked congestion of conjunctiva; intense thirst; tongue soft and white, changing to dry and brown; pulse 90 to 120. Convalescent on eighteenth day.

CASE 70. Charles Johnson (coloured), æt. 25. Chills; severe headache; constipation; bilious vomiting; muscular pains in limbs and neck; pain on pressure over second cervical and seventh dorsal vertebræ; marked congestion of conjunctiva; intense thirst; tongue soft and white, changing to dry and brown; pulse 75 to 124. Convalescent on nineteenth day.

CASE 71. Gardiner Thomas (coloured), æt. 40; from out-wards. Slight headache; constipation; muscular pains in limbs; marked congestion of conjunctiva; intense thirst; tongue soft and white, changing to dry and brown; pulse 70 to 120. Convalescent on twelfth day.

CASE 72. Jane Morille, æt. 18; temperate; from obstetric wards. A hemorrhage of about forty ounces occurred two hours after labour, developing an irritative fever, on which supervened the meningitis; delirium slight; severe frontal headache; diarrhœa; slight vomiting; slight hyperæsthesia; eruption of erythema; eyes pearly white; thirst severe; tongue dry, glazed red; sordes on teeth and lips; pulse 140; epistaxis. Convalescent at end of fourth week. Mind, which was bright and active before sickness, was now very much clouded, and acts slowly and uncertainly; memory impaired; marked deafness.

CASE 73. Anna McGuire, æt. 19; temperate; from obstetric wards. Meningitis set in with milk-fever, with marked delirium; severe frontal headache; bilious vomiting; abdominal pains; marked and general hyperæsthesia; well-marked petechial eruption; conjunctiva injected; slight thirst; tongue coated with white fur, but clean at tip and edges; pulse 140. Convalescent on eighteenth day, without complication.

CASE 74. Catherine Kellihan, æt. 20; temperate; from obstetric wards. Well-marked active delirium; severe frontal headache; diarrhœa; bilious vomiting; general muscular pains; slight opisthotonos; marked petechial eruption; chemosis of right eye; ecchymosis of left; slight thirst; tongue coated with a white fur, tip and edges clean, but afterwards dry and brown, with sordes; pulse 160; complicated by puerperal condition; in labour at time of admission; so stupid that she could give no history of herself; sordes on her teeth. There seemed to be no impediment to descent of fœtus, but the patient was so weak that recourse to the forceps was necessary. The case progressed happily for ten days, when peritonitis supervened, the symptoms of which (with the exception of the pinched face), disappeared after two days. Death occurred on twenty-second day after admission. *Autopsy* revealed large quantities of lymph, tough and adherent, and of a yellowish colour, along longitudinal sinus, in fissure of Sylvius, and at base of brain. Abdominal cavity contained about three pints of pus; intestines knotted and bound together; uterus clean and healthy in appearance.

CASE 75. James Poole, æt. 24; intemperate; from St. Mary's Street. Commenced with a chill; intense headache; constipation; general muscular pain; slight opisthotonos; pain on pressure over cervical vertebræ; marked congestion of conjunctiva; intense thirst; tongue dry and brown in centre; pulse 86 to 130; complicated by pneumonia. Convalescent in twenty days.

CASE 76. John Williams, æt. 12; temperate; from out-wards. Slight headache; constipation; bilious vomiting; muscular pains in limbs; slight hyperæsthesia; slight congestion of conjunctiva; intense thirst; tongue dry and brown in centre; pulse 86 to 120. Convalescent in twenty-one days.

CASE 77. Margaret Kelly, æt. 60; intemperate; from out-wards. Severe headache; constipation; muscular pains in neck, back, and limbs; marked opisthotonos; marked abdominal hyperæsthesia; pain on pressure over cervical and fifth, sixth, and seventh dorsal vertebræ; coarse petechial eruption; marked congestion of the conjunctiva; tongue dry and brown, with clean edges; pulse 112 to 120. Died on sixth day.

CASE 78. Francis Kelly, æt. 36; temperate; from the city. Severe headache; constipation; bilious vomiting; muscular pains in back and neck; eruption of erythema; slight conjunctivitis; severe thirst; tongue dry and brown, with clean edges; pulse could not be felt. Died on ninth day.

CASE 79. George Murray, æt. 57; from out-wards. Severe headache; constipation; muscular pains in limbs; pain on pressure over cervical vertebræ; marked congestion of conjunctiva; intense thirst; tongue dry and brown, with clean edges; pulse 116 to 120. Died in sixty hours.

CASE 80. Joseph Jackson, æt. 27; in medical ward. Severe headache; constipation; bilious vomiting; muscular pains in neck and back; slight congestion of conjunctiva; intense thirst; tongue dry and brown, with clean edges; pulse 90 to 120; frequent and copious epistaxis; eruption of erythema. Convalescent on twelfth day.

CASE 81. Aaron Breed, æt. 23; temperate; from Second and Pine. Slight headache; constipation; muscular pains in limbs and neck; no eruption; marked congestion of conjunctiva; severe thirst; tongue coated with a soft white fur, clean at tip and edges; pulse 80 to 112; repeated epistaxis. Convalescent on fourteenth day.

CASE 82. Louis Dupil, æt. 32; intemperate; from prison. Severe headache; constipation; muscular pains in limbs; slight opisthotonos; no eruption; marked congestion of conjunctiva; thirst severe; tongue dry and brown with clean edges; pulse 68 to 130. Convalescent on eighteenth day with deafness.

CASE 83. John Holland, æt. 27; intemperate; in medical ward. Wild delirium; intense headache; constipation; bilious vomiting; general muscular pains; marked opisthotonos; hyperæsthesia local over abdomen; pain on pressure over cervical vertebræ; eruption of erythema and petechiæ on seventh day; marked congestion of conjunctiva; severe thirst; dry brown tongue; pulse 70 to 128; complicated by phthisis and profuse epistaxis, exhausting the patient and causing death on twenty-first day.

CASE 84. Thomas Brown, æt. 16; temperate; from out-wards. Slight headache; constipation; muscular pains in back and neck; marked congestion of conjunctiva; severe thirst; tongue coated with a soft white fur, but clean at tip and edges; pulse 68 to 120; convalescent on sixteenth day.

CASE 85. John Watson (coloured,) æt. 25; temperate; from St. Mary Street. Active delirium with desire to leave bed; afterwards comatose for seventy hours; could neither swallow nor talk for four days; constipation; muscular pains in neck and limbs; opisthotonos so marked that body formed a bow resting on head and heels; marked hyperæsthesia; pain on pressure over dorsal and cervical vertebræ; marked congestion of conjunctiva; severe thirst; tongue dry and brown; pulse could not be felt for sixty hours, 80 to 130; temperature 98° to 104°; convalescent in three weeks; subsequent parotitis.

CASE 86. Jacob Yeager, æt. 65; intemperate; from out-wards. Severe headache; constipation; muscular pains in neck and limbs; slight opisthotonos; slight petechial eruption; slight congestion of conjunctiva; severe thirst; tongue coated with soft white fur, but clean at tip and edges; pulse 86 to 90. Died on ninth day.

CASE 87. John Wauch, æt. 52; intemperate; from outwards. Slight headache; constipation; general muscular pains; profuse erythematous eruption; marked congestion of conjunctiva; severe thirst; tongue coated with soft white fur, but clean at tip and edges; pulse 80 to 112; convalescent on sixteenth day.

CASE 88. Patrick Young, æt. 29; intemperate; from Bedford St. Intense headache; constipation; general muscular pains; marked opisthotonos; slight hyperæsthesia; pain on pressure over lumbar vertebræ; conjunctiva very much congested; severe thirst; pulse 86 to 140; convalescent on twenty-second day.

CASE 89. Samuel Jackson (coloured), æt. 25; temperate; from Locust St. Severe headache; constipation; muscular pains in neck and limbs; slight congestion of conjunctiva; severe thirst; tongue coated with soft white fur, but clean at tip and edges ;. pulse 68 to 120; convalescent on twentieth day.

CASE 90. Stephen Bristol (coloured), æt. 28; from out-wards. Headache constant and severe; constipation; nausea; slight general hyperæsthesia; marked congestion of conjunctiva; severe thirst; tongue dry and brown; pulse 60 to 120; convalescent on sixteenth day.

CASE 91. John Malone, æt. 51; temperate; from Tenth and Lombard Sts. Severe headache; constipation and nausea; muscular pains in neck and limbs; marked opisthotonos; profuse petechial eruption; marked congestion of conjunctiva; pupils contracted; thirst severe; tongue dry and brown; pulse 86 to 130; died on ninth day.

CASE 92. Richard Martin, æt. 36; from Front and Arch Streets. Headache severe; constipation and bilious vomiting; muscular pains in neck and back; pain on pressure over cervical region; eruption of erythema and petechiæ; marked congestion of conjunctiva; tongue coated with soft white fur, but clean at tip and edges; thirst severe; pulse 70 to 120; epistaxis. Convalescent on twelfth day.

CASE 93. James Wood, æt. 25; from Bedford Street. Severe headache; constipation; bilious vomiting; slight opisthotonos; eruption of erythema; slight congestion of conjunctiva; severe thirst; tongue dry and brown; pulse 80 to 126; epistaxis. Convalescent on seventeenth day.

Case 94. Henry Saxe, æt. 68; from out-wards. Muttering delirium; intense headache; constipation; muscular pains in neck, limbs, and back; slight opisthotonos; petechial eruption; marked congestion of conjunctiva; severe thirst; tongue dry and brown; pulse 90 to 120. Died on eighth day. Large deposits of fibrin at base of brain.

Case 95. Henry Baker, æt. 20; from Fifth and Catherine Streets. Slight delirium; slight headache; constipation; muscular pains in neck and limbs; marked congestion of conjunctiva; severe thirst; tongue dry and glazed; pulse 90 to 120. Died on eleventh day.

Case 96. Thomas Ross (coloured), æt. 20; from Spafford Street. Severe headache; constipation; bilious vomiting; muscular pains in neck, back, and limbs; conjunctiva deeply congested; thirst severe; tongue white and soft, with clean tip and edges; pulse 64 to 120. Convalescent on eleventh day.

Case 97. Catherine Cavanaugh, æt. 8; from Sixth and Shippen. Severe frontal headache; constipation; nausea; general muscular pains; slight hyperæsthesia; eruption of erythema and petechia; injected eye; slight thirst; tongue white and soft; pulse 120 to 135; skin hot and dry.

Case 98. James Cavanaugh, æt. 11; from Sixth and Shippen. Severe frontal headache; constipation; vomiting; general muscular pains; rubeoloid eruption; eye congested; slight thirst; tongue white and soft; pulse 90 to 120; skin hot and dry. The mother of these children died in the city, of meningitis. The children were sent into the hospital, and are doing well.

This epidemic, like those whose histories have been handed down to us by previous writers, has selected its victims from among the robust and hardy. In our tabulated statement there are but eighteen females to eighty males, or a ratio of one to four. In the hospital entire there were treated during the four months over which our record extends, 161 cases; these were distributed in the different wards as follows:—

MEN'S WARDS.	Treated.	Cured.	Died.	Under treatment.
White medical	82	32	24	26
Black "	36	29	7	—
White venereal. . . .	2	1	1	—
Black "	1	—	1	—
Children's asylum . . .	1	1	—	—
Total males . . .	122	63	33	26
WOMEN'S WARDS.				
White medical	29	19	7	3
Black "	1	1	—	—
White surgical	1*	—	1	—
White venereal	2	1	1	—
Nursery and obstetric . .	5	2	1	2
Children's asylum . . .	1	1	—	—
Total females . . .	39	24	10	5
Total males . . .	122	63	33	26
Total	161	87	43	31

The patients ranged from 8 to 68 years of age. The character of our hospital prevents us from having many children among our patients. There were no cases originating in the children's asylum, and but two were sent in from the city. Of the whole number scarcely one-third had reached the age of forty years. One-half were between the ages of fifteen and thirty; and were, as a class, of a vigorous and hardy appearance, but were exposed by their habits or occupations to the inclemencies of the cold and stormy winter which has just passed. With few exceptions they were intemperate and irregular in their habits; dwelling in the most filthy portions of our city, in crowded tenements, and frequently in under-ground apartments, and in many cases not coming into the hospital until the chances of recovery were seriously compromised.

The first case (see Case 1) was that of a large hearty man, who did not appear to be sick at the time of admission, but was thought to be merely labouring under the effects of a debauch. He was sent to the out-wards, where he remained a few hours only.

During the winter season the sleeping-rooms in the out-wards became very crowded; and they were in this condition all of the past winter, so that wards calculated to accommodate twenty-eight persons, were crowded with from seventy to ninety; mattresses being placed on the floor of the apartment, raising the person but a few inches above the floor.

Notwithstanding this condition of things, the epidemic did not spread; it showed no signs of contagiousness; sporadic cases occurred all through the house, being confined to no particular part, two successive cases rarely coming from the same ward.

The attack of the disease came on gradually, with about one week of prodromata, consisting usually of muscular pains in limbs, back, neck, &c. One patient, who had had a toe frosted a year before, complained of severe pain in it. Accompanying these pains were a general soreness, a feeling of extreme lassitude, general tenderness of the surface, so that a touch became painful; nausea, bilious vomiting, but little or no disturbance of the bowels.

The real onset of the disease is ushered in with sudden and increasing ataxic symptoms; an increase in the heat of the skin; a greater rapidity and diminished volume to the pulse; a coated tongue; great thirst; a peculiar change in the countenance; and the appearance, in many cases, of an eruption.

This eruption was of varied character; in a word, all the varieties characteristic of the typhoid class of fevers, except rose-coloured spots, were present, viz: erythema, urticaria, petechial mottlings, vibices, hemorrhagic petechia, &c. Hemorrhagic ecchymoses, or vibices, were not present in any case (by this I mean the rapid exudation of the altered blood into or underneath the cutis). Of the ninety-eight cases recorded, thirty-six had marked petechial eruptions not disappearing under pressure; thirteen had mixed petechiæ and erythema; nine erythema and urticaria; three had indistinct petechial mottlings; and in thirty-seven cases there was no eruption at all. If present, it usually appeared early; it was in many cases the first diagnostic mark; and although showing, perhaps, the condition of the vital fluid, it did not seem to have any reference to the degree of cerebral inflammation or to the prognosis.

Headache was a prominent symptom, and a characteristic one. Many of the patients, somewhat peculiarly, adopted the same simile in describing this symptom, saying their head felt as if "bound with a hoop of iron." They generally located the pain as frontal or occipital, although in some cases it was diffused and general. It was more generally noticed than any other one symptom, being present in ninety-two of the ninety-eight cases recorded. The application of a few cut-cups to the temples and neck uniformly relieved this headache.

Delirium.—As a rule, the delirium in this disease was less marked than is usual in typhoid conditions. In thirty-one cases there was no delirium at all; there was sometimes a condition of morbid vigilance, with an anxious, restless expression of countenance. In a number of cases there was merely a loss of animation and interest—a mere stupidity and soporose condition. Sometimes this existed during the day, with slight delirium at night. In twenty-nine cases there was a quiet, talkative delirium, coming on periodically for a few hours in the evening, or lasting for a few days, and then disappearing. There were but three patients that evinced any desire to leave their beds while labouring under the delirium. In several of the fatal cases, in answer to any inquiry as to their condition, the patients would reply that they felt "bully." In nine cases the delirium was of a more active and even of a violent character. In five there was coma, lasting, in two cases, for seventy-two hours, the pulse at radius being entirely imperceptible for a great part of the time. In eighteen cases no notes respecting the delirium were taken.

Condition of bowels.—Constipation in seventy cases; diarrhœa in thirteen; alternate diarrhœa and constipation in ten; while thirteen were perfectly regular. The feces were but slightly abnormal in colour, odour, or consistence. Neither constipation nor diarrhœa gave any trouble in the treatment; either condition seemed rather to be the result of habit with the patient than the effect of the disease.

Condition of stomach.—Nausea in nine cases; bilious vomiting to a greater or less extent in forty; and a perfectly quiet condition in forty-nine. This symptom was in several patients a periodical one, appearing for a few hours in the day, for several successive days; at which times the stomach rejected any matters placed in it; at other times being tolerant and retentive. It was in no case a very troublesome symptom.

Muscular pains formed a prominent symptom among the prodromata, but varied much in location, severity, duration, and character. To a greater or less extent they were present in almost every case where reliable answers could be elicited. Sometimes these pains disappeared early, but in many cases they, with the stiffness, lasted until convalescence was established. Their usual seat was in the posterior muscles of the legs and thighs, the erector-spinæ muscles, and those of the neck. Again it took the character of a general soreness more or less severe involving the whole muscular system, and having its culminating point in the neck or back, and developing in some cases decided

Opisthotonos.—This was marked in seventeen cases; accompanied with subsultus tendinum in two cases only; in twenty-eight cases slight contraction of the muscles of the back existed, evidenced sometimes simply by its being impossible to approximate the chin to the breast.

Hyperæsthesia of the general surface existed in thirty-eight cases in various degrees of intensity, sometimes very slight, in others so severe as to cause the patient to exclaim when touched with the end of the finger.

Pain on pressure over vertebræ was entirely distinct from the two symptoms last alluded to, and was elicited by pressure on the spines of the vertebræ; the test was not applied to all of the patients; but in four of them pressure caused pain along the entire length of the column; in eight it was confined to the cervical region; in four it existed in portions of the cervical and dorsal together; in seven it was local in portions of the dorsal region; and in one it was evident only in the lumbar region. This pain seemed to be of the same character as that elicited by similar means in myelitis, it was decided, but not severe; but in most of the cases it was easily distinguished from the tenderness of the skin and the soreness of the muscles of the back.

Condition of the eye.—The expression of the whole countenance was peculiar, and might almost be said to be diagnostic. The corners of the mouth were drawn down; the eyes protruded or ecstatic; the eyelids widely opened; and the pupils contracted, sometimes only apparently so in consequence of the large surface of the eye exposed. The patient had a restless excited air and seemed to watch with interest every motion and change of countenance of those around him. He seemed to be looking through instead of at an object, in consequence of the visual axis of the two eyes being parallel; in some cases the contraction or dilatation of the pupils of the two eyes did not correspond; occasionally one would contract while the other dilated under the action of a strong light. Photophobia was present in several cases, evidenced even during coma by the rigid and continued closure of the eyelids, and an opposition to their forcible opening. The vessels of the conjunctiva were universally congested (eye pearly white in two cases only, accompanied by excessive hemorrhage), reaching in one case the condition of chemosis this was followed in two cases by considerable purulent secretions, in others a few pus-corpuscles were observed occasionally. The lachrymal secretion was frequently excessive.

Tongue.—The condition of this organ was peculiar. In thirty-nine cases it was coated in the centre with a thick, white fur, soft and moist, the tip and edges remaining clean; this condition remained throughout the entire attack. In sixteen cases it was in this condition at the beginning of the attack, but afterwards became brown and dry; in some of these it was soft at one examination, and dry and brown an hour afterwards. In most of the remaining cases it was dry, sometimes glazed, in others with a brown or yellow fissured coating; sordes was observed in three or four cases only, and in those the deposit was slight.

Thirst.—Was a marked and persistent symptom; in many cases as insatiable as met with in cholera, and yielding only when convalescence became fully established. Out of ninety-eight cases it was severe in seventy-six; in most of the others it was not so distressing, but was constant and unappeasable.

Pulse varied from normal to 150 beats per minute in uncomplicated cases, and as high as 160 in two cases in puerperal women; it was in all very weak, with a dichrotic tendency; sometimes entirely imperceptible in the radial artery, and always interrupted by a very slight pressure. It is perhaps the most deceptive symptom that was present. No one would have suspected an inflammation of a high grade, with a pulse which, although sometimes quick, was never strong, but always gaseous and feeble in the extreme.

The *temperature* is lower than that recorded in any other typhoid or inflammatory disease. The observations were made at 6 A. M., 12 M., and 6 P. M. daily; and were taken, as far as possible, in typical cases, and in those where the temperature was most elevated, and yet the average is lower by four or five degrees than that of typhus or typhoid fevers, pneumonia, &c. In two cases only did the thermometer in the axilla reach 105°. In fifteen cases it was between 104° and 105°; in twelve between 103° and 104°; in seven between 102° and 103°; in six between 101° and 102°; and in two it was below 100°; records being made in forty-four cases. The numbers given are the highest point reached in each case. The difference in the temperature at the evening and morning observations was not so marked as in most other fevers, a fall of more than one degree being unusual, and frequently there was no change. A regular and gradual descent indicated the beginning of convalescence; a rapid fall was the sure precursor of collapse.

Complications.—In nine cases there was a complication of pneumonia of one or both lungs; (when this came on while the patient was under observation it was preceded by an increase of temperature.) In seven cases there was an intercurrent bronchitis; and in many there was more or less tendency to irritation of the air-passages.

Duration.—In the condensed statement the duration has been marked in many cases as approaching twenty or thirty days. It must not be understood that the acute stage of the disease occupied the whole of this period; this is intended to include the three to ten days of prodromata, and so much of the convalescence as to enable the patient to rise, at which time the observations ceased. The acute attack rarely lasted through a fortnight; in a few cases which were seen early, the disease was aborted by decided treatment, and the patients were declared convalescent in the first week. Death occurred, in the fatal cases, at various times during the first two weeks. In a few cases of peculiar virulence death intervened within the first forty-eight hours.

Of 161 cases treated, 87 were cured, 43 died, and 31 remained under treatment with a fair prospect of recovery; being a little over 26 per cent. of deaths out of the whole number of cases treated.

Sequelæ and complications.—Deafness existed during and after convalescence to a greater or less extent in sixteen cases. Bed-sores occurred in four cases; they were formed by large, deep, black sloughs.

Forgetfulness of events occurring during sickness, but while the patient was apparently in full possession of his faculties, was observed in seven cases. The events forgotten were such as the visit of a mother, &c. Complete loss of memory occurred in one case only. Epistaxis occurred in twelve cases, and so profuse in two as to cause considerable exhaustion.

Purulent discharges from the ears occurred in three cases during convalescence.

Parotitis was met with in two cases; both recovered.

Carbuncles and boils were noticed as frequent sequelæ. Partial paralysis was a sequelæ in three cases.

Delirium tremens, and the effects of debauch, was a frequent complication.

The puerperal state complicated five cases.

One case originated in the insane asylum.

PHILADELPHIA, 610 S. NINTH STREET.

ART. II.—*On Luxation of the Body of the Sternum; with Remarks on the Anatomical Structure of the Superior Sternal Articulation.* By JOHN H. BRINTON, M. D., one of the Surgeons of St. Joseph's Hospital, Philadelphia; and Lecturer on Operative Surgery.

THE sternum, it will be remembered, is composed of three separate parts; the manubrium, the body or gladiolus, and the xiphoid or ensiform cartilage. These portions are connected by two articulations, which by many have been supposed to become ossified in the later periods of life. But in all probability ossific union between the manubrium and body of the sternum does not take place so frequently as is generally supposed. Béclard states that it does not occur until the sixtieth year, and often not at all. Mr. Gray, in his *Treatise on Anatomy*, remarks that this articulation is rarely obliterated, except in old age. An observation by the writer of about seventy bodies would corroborate these statements; for, although many of the sterna examined were those of persons far advanced in years, in only four or five instances was ossification of the superior sternal articulation discovered.

As might naturally be supposed, the manubrium and body of the sternum, forming as they do, in the vast majority of cases, an amphiarthrodial articulation, may at times become separated or luxated. This accident, however, if we may judge from the number of reported cases, is of exceedingly rare occurrence. So rare indeed is it, that it seems to have escaped the notice of nearly all surgical writers, or if noticed at all, to have been classed under the head of fractures. M. Maisonneuve, in a memoir read before the Academy of Medicine in Paris, in March, 1842, and published subsequently in the *Archives Générales* for July of the same year, was the first to describe the true nature, symptoms, and pathology of luxation of the body of the sternum. In his paper M. Maisonneuve reports two cases of this dislocation observed and treated by himself, and he also furnishes the details of three cases derived from other sources. The general characteristics in all of these instances were the same, namely, a dislocation of the upper portion of the body of the sternum, forward and upwards, upon the lower border of the manubrium. M. Malgaigne, in his treatise on Dislocations, reports three cases of traumatic luxation of the sternum in addition to those mentioned by M. Maisonneuve. He also submits accounts of three instances of pathological or non-traumatic displacements of the same bone. In 1863 M. E. Ancelet published in the *Gazette des Hôpitaux* an article on Luxations of the Superior Sternal Articulation, in which he presented a summary of all instances of these injuries previously reported; at the same time exhuming from the pages of one or two of the older surgical writers accounts of certain cases which, in his opinion, should be regarded as dislocations of the sternal bones, although they were ranged as fractures by the original reporters.

The above papers comprise—as far as the writer has been able to learn—all of the information we possess bearing upon the very interesting injury which forms the subject of this article.

It will be seen that the whole number of cases of luxation of the body of the sternum, both forwards and backwards, which have been reported, is but fourteen.

In view, therefore, of the rare occurrence of this accident, and of the infrequent opportunities which have been afforded for its post-mortem investigation, it seems to the writer that the notes of an additional case observed by him may not be without interest.

CASE I. Michael McAvenny, aged 23, a resident of Jaynesville, Penna., was admitted into the St. Joseph's Hospital on the 4th of October, 1859. He stated that about the 15th of August, while employed at the Black

Creek coal works, in Luzerne Co., he was caught by the flywheel, 18 feet in diameter, belonging to a 50 horse-power engine, by which he was carried once or twice around. His loss of consciousness was only momentary, and on recovering his senses he found himself under the flywheel, in the trench in which it plays. He experienced at this time no pain, but had, as he said, a dead feeling in his legs and in the lower part of his back. For a week after the accident, he suffered from retention of urine, necessitating the use of the catheter. This retention has since been followed by urinary incontinence, which exists now, as well as involuntary evacuations of his bowels. Up to the time of his being brought to St. Joseph's Hospital he had been cared for by his friends at Jaynesville, and had been under medical treatment.

On examination after his admission into hospital, I found that a complete paralysis of motion existed in both of the lower extremities, as well as an entire loss of sensation, except over the left buttock. There appeared to be some prominence and derangement of the spinous processes of the seventh and eighth dorsal vertebræ, with slight pain on pressure. A luxation of the sternum existed at the junction of the manubrium with the body of the bone, the latter being thrown forwards and upwards, and resting upon the former. The prominence of the upper end or border of the body of the bone was very marked, measuring in height perpendicularly more than one-half of an inch; the central facet for the articulation of the manubrium, as also the two lateral facets for the articulation with the inferior articulating surfaces of the second rib on each side could be distinctly detected by the finger. Both of the second ribs were apparently adherent to the manubrium. The third and fourth costal cartilages of the right side seemed to be fractured, and their sternal extremities were markedly elevated beneath the integuments. The space between the upper margin of the third and the lower margin of the second ribs on either side was much less than natural. The first and third intercostal spaces were normal. The patient stated that he had not at any time suffered much pain, nor had he experienced difficulty in breathing, save upon a very full expiration and inspiration. A large bedsore had formed on either buttock. He slept well, and his appetite and spirits were good. This patient's general health appeared to improve for a while after his entry into the hospital, under the administration of quinia, iron, and good diet; and the bedsores granulated rapidly, almost to the level of the surrounding integuments. For the first two or three weeks after admission, the temperature observed upon the inside of the thighs was somewhat elevated, averaging about one hundred and two degrees.

Nov. 15 *to Dec.* 15. During the month the lower extremities evinced a great tendency to slough; the bedsores on the buttocks re-formed, so as to expose the dorsal surfaces of the iliac bones, in spite of all precautions. Sloughs also formed on the legs posteriorly, and over the ankles to such an extent as to denude the tarsal bones; wherever the slightest pressure or tension existed, the integuments became gangrenous. Iron, quinia, malt liquors, and tonics generally were freely administered, the patient's appetite continuing tolerably good. From the 15th to the 31st of December, however, he became gradually weaker, and died from exhaustion on the 8th of January, 1860, ninety-four days after the reception of the injury.

Autopsy thirteen hours after death.—Body much emaciated; the sloughs on the buttocks broad and deep, extending to the dorsal surfaces of the iliac bones, which were denuded of periosteum. The body of the sternum was found to be luxated upwards and forwards, covering the lower and anterior portion of the manubrium to the extent of three-quarters of an inch, and firmly bound to it by fibrous tissue. The anterior ligamentous sheath was ruptured. The lateral oblique facets on the upper portion of the body of the bone were readily distinguished, and were covered with their incrusting cartilage. The central facet for the articulation of the manubrium was covered by fibrous tissue. The projection of the body of the sternum upon the manubrium measured one-half of an inch in perpendicular height. The costal cartilages of the *first* and *second* ribs were adherent to the manubrium. The *third* right costal cartilage was fractured about one-half of an inch and the *fourth* costal cartilage of the same side about one and one-quarter inches from their sternal articulations. In both cases, union by fibrous tissue had taken place with deformity, the sternal extremities of cartilages projecting under the skin. The body of the sternum was twisted somewhat obliquely downwards toward the right side. The distance between the first and second ribs was normal; whereas, between the second and third ribs it was materially decreased, measuring less than one-half of an inch, whereas it should have been at least one inch.

Examination of Posterior Surface of Sternum.—Lower border of manubrium projecting downwards. Inferior articular facets of second costal cartilages discernible, although partially covered with fibrous tissue. Posterior ligamentous sheath of sternum raised up by the projection of the lower portion of the manubrium, but unruptured. The union of the second costal cartilages to the manubrium was undisturbed. The relations of all the other ribs to the sternum were normal, as were also the attachments of the clavicle to the first bone of the sternum. The manubrium and body of the sternum were firmly bound together in their abnormal position by adventitious fibrous tissue. Anterior mediastinum natural. Thoracic viscera healthy.

Spine.—The eighth dorsal vertebra was fractured and crushed, presenting an angular displacement backwards. The axes of the vertebral column above and below the seat of fracture, formed with each other an angle of twenty degrees backward. The posterior fragment of the fractured vertebra was forced backwards so as almost to touch the posterior lamina of the vertebra, occluding the spinal canal, and completely destroying the continuity of the spinal marrow. The investing membranes of the cord were torn off anteriorly, and the posterior portion of the sheath alone was left, tightly compressed between the displaced fragment of the body of the vertebra and the fractured spinous process. The spinal marrow to the extent of two inches above, and the same distance below the seat of fracture, was softened and disintegrated. Bony union of the fragments of the body of the fractured vertebra had occurred, and a considerable amount of bony callus had been poured out on the anterior portion of the body of the bone. There was no lesion of any of the abdominal viscera.

For the purposes of comparison the following summary of thirteen additional cases of luxation forward of the body of the sternum, is presented. These are all the cases which the writer has been able to obtain access to, and, as far as he can learn, comprise all of the authenticated reported instances of this injury:—

CASE II., observed and reported by M. Maisonneuve.—Carriere, a glazier, aged 27, on the 28th of August, 1841, fell from a height of forty feet upon the floor of a church in which he was at work. He was carried to the hospital of Hôtel Dieu. Upon examination M. Maisonneuve discovered these lesions: 1, a contused wound of the scalp in the region of the left parietal boss, with denudation of the bone; 2, fracture of left clavicle; 3, an angular projection of the vertebral column, on a level with the fourth dorsal vertebra; 4, on the front of the chest, a projection forwards of the superior portion of the body of the sternum, which could be felt to rest upon the manubrium. The first and second ribs could not be detected, while all of the lower ribs were more prominent than natural, and were apparently intact, except the third of the left side, the cartilage of which appeared to be broken near its sternal articulation. There was complete paralysis of motion and sensation in the lower extremities. The patient, who had lost his intelligence at the time of the accident, regained it by the time of his arrival at the hospital. An almost constant involuntary dribling of feces continued; a bed-sore formed over the sacrum, and the patient sank from exhaustion on the 12th of October, six weeks after his entry into the hospital.

Autopsy.—1. Scalpy wound healed. 2. Fracture of clavicle united. 3. Sacrum exposed by bed-sore. 4. The spinous processes of the seventh cervical, and third and fourth dorsal vertebræ, which had been fractured at their base, were partially consolidated by fibrous callus. 5. Horizontal fracture, with crushing of the fifth dorsal vertebra; in the cavity of the vertebral canal, the membranes of the cord were intact, but the spinal marrow itself was atrophied, and softened for the space of almost three centimetres on a level with the fifth dorsal vertebra; above and below this point the marrow was healthy. 6. Sternum. The body of this bone was luxated without fracture forwards and upwards upon the inferior extremity of the manubrium, which it overlapped for about two centimetres. The cartilages of the first and second ribs preserved their normal relations to the manubrium. The cartilage of the third left rib was broken; in other respects the relations of the body of the sternum to the ribs were natural. The ligamentous fibrous sheath upon the anterior face of the sternum was ruptured, leaving the three articular facets upon the superior portion of the body of the sternum exposed to view, and covered with their cartilage. The fibrous sheath upon the posterior surface of the sternum was untorn, but was raised up by the projection of the inferior margin of the manubrium. The cartilages of the second ribs were united to their proper facet on this bone. The first and second sternal bones were strongly united in their abnormal position, so as to permit but little mobility.

CASE III., observed and reported by M. Maisonneuve.—Maupas Jean, aged 42, a tiler, fell forty-two feet upon the street pavement, and was carried, moribund, to Hôtel Dieu. He died very shortly, and on post-mortem examination the following injuries were observed: 1. A transverse fracture of sacrum. 2. Separation of both right and left sacro-iliac symphyses, and also of the pubic symphyses. 3. Fracture of twelfth dorsal vertebra, with laceration of spinal cord. 4. Luxation and fracture of wrist. 5. Luxation of the superior sternal articulation, the body of the bone being thrown forwards and upwards upon the manubrium, which it overlapped for the extent of about two centimetres; the cartilages of the first and second ribs remained attached to the manubrium, and those of the remaining ribs to the body of the sternum. The anterior ligamentous sheath was broken on a level with the luxated surfaces; the posterior sheath, on the other hand, was raised up and untorn. The three articular facets upon the superior border of the body of the bone could be felt through the integuments, and were covered by their incrusting cartilages. The ditsance between the superior border of the second sternal bone and the third ribs was normal. The cartilages of the second ribs remained attached to the first bone by their superior articular facets, while their inferior facets had separated from the body of the sternum. On the left side the cartilages of the seventh and eighth ribs were ruptured near their sternal extremity.

CASE IV., reported by MM. Maunoury and Thore, and quoted by M. Maisonneuve.—Bressaut, a laborer, was taken to Hôtel Dieu July 25th, 1841, having fallen about twelve feet upon his back; paralysis of motion and sensation in lower extremities and lower portion of trunk; priapism; retention of urine; involuntary evacuations; respiration diaphragmatic. The patient died five days after the reception of the injury, when fracture of the fifth cervical vertebra was discovered, and the brain was congested with effusion. A dislocation of the second bone of the sternum, forward upon the manubrium, was also revealed.

In addition to the above case, MM. Maunoury and Thore have extracted from Roux's clinique two instances of injury to the sternum. In the first of these a man fell twenty-five feet upon a bank, producing fracture of the fourth dorsal vertebra, paralysis, and apparently separation of the two upper bones of the sternum. Death occurred forty days after the accident from suppuration of a bed-sore over the sacrum. In the second of these cases a man fell from the fifth story, and was carried dead to Hôtel Dieu. On examination, separation of the sternal and pelvic articulations, fracture of the last cervical and first dorsal vertebræ, and luxation of the right wrist, were revealed. Both of these cases were regarded by Maunoury and Thore, as well as by Malgaigne and Maisonneuve, as fractures. M. Ancelet, however, considers them to be true luxations. The writer has not included them in his summary of sternal dislocations.

CASE V., reported by Maisonneuve, is from a specimen without history, deposited in the Musée Dupuytren by M. Thillaye, in 1820.—This specimen presents a luxation of the body of the sternum forwards, the first and second ribs remaining attached to the manubrium. In this case the patient appears to have lived for some weeks after the reception of the injury, since a partial consolidation of fractures of the left clavicle and body of the scapula of the same side had taken place.

CASE VI., reported by Auran.[1]—In this instance, a man who was mounting a ladder planted against a tree, fell with it in such a manner as to strike the upper part of the sternum against one of the rounds of the ladder. As a result of this violence, the manubrium was forced backward behind the body of the sternum. This luxation was reduced by force applied to the upper and lower portion of the trunk, and the patient was cured in twenty days.

CASE VII., presented to the Academy of Medicine in 1843, by M. Drache, and quoted by Malgaigne, who examined the case.—This patient, a young man 18 years of age, was crushed in a cellar by pieces of timber. In endeavouring to extricate himself he heard a cracking of the sternum, and the luxation was produced. The body of the sternum was thrown forwards upon the manubrium. The second rib of the right side adhered to the manubrium; the left, much less depressed, appeared to be attached to the body of the bone. All efforts at reduction failed. The principal symptom in this case was the crackling caused by the sternum on inspiration.

CASE VIII., reported by M. Malgaigne, and treated by him at the Hospital Saint Antoine.—This patient, in passing from one boat to another, fell in such a manner as to strike the upper part of the breast-bone against the sharp edge of the boat. Luxation forwards of the body of the sternum took place. When examined by M. Malgaigne, the second rib of the left side was adherent to the manubrium, whilst the second rib of the right side appeared to be situated on a more anterior plane than its fellow, and to be separated from both sternal bones. This patient experienced much difficulty in respiration. Repeated efforts at reduction proved unsuccessful. On the twenty-fifth day the patient left the hospital.

---

[1] Journal de Médecine, Chirurgie, &c., 1771, t. xxxvi. p. 521, and quoted by Maisonneuve and Malgaigne.

Case IX.,[1] reported by Duverney.—"A quarryman lay upon one side under his work. The stone, which was more than five feet long, fell upon him. The compression was so violent, as well by the weight of the stone as by the resistance of the opposite side, that the second bone of the sternum was separated from the first, and made a wound in the teguments. The wounded person died instantly. The heart and lungs were found entirely dilacerated."

Case X.,[2] reported by M. Chevance.—This patient, while working at a ceiling, fell upon his feet from the height of one story, luxating the body of the sternum forwards, and fracturing the cartilage of the second rib of the left side. The luxation was partially reduced, and absolute rest maintained for fifteen days. A month afterwards this patient was able to resume his occupation, but the deformity remained in only a slight degree less than before the attempted reduction.

Case XI., reported by Auran[3] and Bazille (David) in 1771.[4]—A mason fell from a height of fifty feet, striking with his back a projecting object, so that his feet were on one side, and his arms on the other side of this object. The left femur was fractured, and the spinous processes of the last dorsal and first lumbar vertebræ. The first and second bones of the sternum were separated. This patient was treated by position, and recovered from all of the injuries he had received. The account given of this case is vague, and it is difficult to decide absolutely as to the precise nature of the injury.

Case XII., quoted by Ancelet as Nelaton's case.—A young man fell from the second story upon his feet, fracturing both legs. He experienced pain at the anterior portion of the chest, and presented an incomplete luxation backwards of the first bone of the sternum, appreciable to the touch. This patient died in three days.

Case XIII., quoted by Ancelet.—A young man, aged 18, fell twenty feet, striking the ischium and back. Depression of two-thirds of an inch at suprasternal articulation. The luxation was reduced in twenty-four hours by placing a cushion under the back. The patient died. *Autopsy.*—Separation complete, of first and second bones of sternum. Two other fractures of sternum, as well as of sacrum, pelvis, and of first lumbar vertebra.

Case XIV., reported and treated by M. Ancelet.—Alexis L——, a boy, aged 13, while exercising on parallel bars, his body curved forwards, and his feet almost touching the ground, suddenly came down upon his heels—without, however, losing his hold of the bars. On the following day M. Ancelet examined the patient. He found him in bed, his body curved forwards; severe pain, referred to the inferior portion of the sternum. No trace of contusion on any portion of the body. On attempting to straighten his body the pain and dyspnœa were markedly increased; prominence of the body of sternum, on which the central and left oblique facet could be felt; the right oblique facet could not be distinguished. The second rib of left side deeply seated; its fellow on right side apparently in relation with body of sternum. On placing a pillow under his back, allowing his head to hang over the edge of the bed, and making steady pressure on the anterior portion of the chest, on a level with the body of the sternum, M. Ancelet succeeded, after prolonged efforts, in reducing the dislocation. He then applied a retaining bandage. The boy was kept in bed six days, and at the expiration of three weeks was perfectly cured. In his remarks on this case, M. Ancelet inclines to the belief that this luxation was incomplete in character, and was perhaps brought about by the action of the pectoralis major muscle; that it existed without any grave concomitant lesion;

---

[1] Duverney, "Diseases of the Bones." Translated by Samuel Ingham, Surgeon. London, 1762.

[2] Union Médicale, 1850, p. 6, and quoted by Malgaigne.

[3] Journal de Médecine, &c., t. xxxvi. p. 520.

[4] Prix de l'Académie de Chirurgie, t. 4, 1^{e} partie, p. 452, 1819.

and that, moreover, the reduction was obtained, maintained, and followed by a complete cure.

In the preceding pages, reference has been made to all of the reported cases of anterior luxation of the superior sternal articulation, which the writer has been able to collect. It will be seen that in twelve of the fourteen cases presented, the body of the sternum was displaced upwards and forwards, and was complete. In two instances (Cases XII. and XIV.), the luxation of the bone was in the same direction, but was partial or incomplete. But one properly authenticated case is on record of the reverse displacement, namely, that of the body of the sternum backward, or what is the same thing, a dislocation of the manubrium forwards. In this case, which is reported by M. Ancelet, the deformity arising from a backward dislocation of the second sternal bone, was detected by him in a patient eighty-one years of age, whom he was examining for other causes. The manubrium rested in front of the body of the sternum, the first rib being attached to the former, and the second rib to the latter bone. The man had fallen about forty feet, but no reliable account of the accident could be procured. M. Ancelet, also cites as veritable backward dislocations of the body of the sternum, two other cases. One of these is reported by Petit, and another by Sabatier; but from the histories given, it would seem more than probable that in both of these instances the lesion was a fracture, and not a luxation.

From an analysis of the foregoing cases of forward luxation of the superior sternal articulation, it is evident that the injury in question may be produced either by direct or indirect force. Thus in both of the cases reported by Maisonneuve, and in those of Maunoury and Thore, Duverney, Chevance, Auran and David, and myself, the luxation was caused in all probability by indirect violence. On the other hand, in M. Drache's case, in that reported by Malgaigne (Case VIII.), and in that by Auran (Case VI.), the force was directly applied. As examples of the indirect force above alluded to may be mentioned falls from a height upon the feet, or upper portion of the trunk, and also pressure exerted laterally upon the thorax. In three instances in which the sternum was displaced by direct violence, the force was received immediately over the manubrium, driving this bone backwards, and permitting the body of the sternum to ride forwards and upwards. The results of the above cases (excluding the specimen of the Musée Dupuytren) may be thus summed up: Died, seven; Recovered, six. It will be observed, however, that in no one of the fatal cases was death brought about by the lesion of the sternum alone; in six instances it resulted from fracture of the vertebral column; and in one, Duverney's case, from laceration of the lungs and heart. These facts, taken in connection with the recovery in six instances, would indicate that the prognosis, as far as mere luxation of the sternum is concerned, is not necessarily grave. As Dr. Ashhurst has observed, in speaking of injuries of the sternum[1]—"Luxation or diastasis is comparatively a slight injury, for the posterior ligament remaining intact, as was found in all the cases examined by Maisonneuve, the viscera escape laceration, and therefore, if there be not some complication which proves fatal, the patient may be expected to recover."

Symptoms.—The symptoms which have been noted in forward luxation of the body of the sternum, and which can with propriety be charged to the injury itself, are pain, dyspnœa, a crackling or creaking sound during the respiratory movements, due to the position of the bones, and deformity. The symptoms first enumerated may or may not be present in all cases, but when met with, they can readily be accounted for, if the abnormal relations of the two upper sternal bones are borne in mind. The latter symptom, the deformity, is perhaps pathognomonic. A deformity somewhat simulating this may exist in fracture, but yet it differs from it in certain essential characteristics. In luxation, the tumour or projection on the front of the chest which is caused by the overriding of the upper extremity of the body of the sternum upon the manubrium, varies of course in size according as the sternum is poorly or well developed—usually this projection is from one and three-quarters to two inches in breadth, and one half of an inch in perpendicular height. Its bony outline can easily be followed by the fingers, and the three articular facets, upon the upper portion of the gladiolus may be readily detected. Three facets as we will show hereafter, and as was first clearly pointed out by Maisonneuve, articulate normally; the central one with the lower end of the manubrium, and the two lateral ones with the inferior oblique facets of the costal cartilages of the second ribs. That these facets can be recognized even at a late period after the occurrence of the displacement, is proved by the case reported by the writer, in which these articular surfaces were clearly traceable at all times during the patient's ninety four days of life.

Another series of symptoms usually met with in dislocation upwards of the body of the sternum, are those which depend upon the relations of the costal cartilages to the sternal bones. In the majority of cases reported, the cartilages of the two upper ribs are stated to have remained adherent to the manubrium, and to have been depressed or carried backwards with this bone. The cartilages of the third, fourth, fifth, sixth, and seventh ribs, on the other hand, remained attached to the body of the sternum, and accompanying this bone forwards presented an abnormally prominent appearance beneath the integuments. It has also usually happened that one or more of the last-named cartilages have been ruptured or fractured near to their sternal articulations. Thus, in four of the cases referred to in this paper (Cases I., II., III., and V.), the second ribs present their attachment to the manubrium; in one (Case VIII.), the second left rib adhered to the manubrium whilst its fellow on the right side appeared, as M. Malgaigne states, to have lost its attachments to both bones of the sternum. In one case (Case VII.), the same reporter observes that the second rib of the right side adhered to the manubrium, while that of the left side remained attached to the body of the sternum. In the case of the child described by M. Ancelet, the relations of the second could not be accurately ascertained. Another symptom of dislocation of the sternum is the diminished breadth of the second intercostal space. This must necessarily be the case if the third ribs, preserving their attachments to the body of the sternum, are carried upwards.

---

[1] Fracture of the Sternum, Am. Journ. Med. Sciences, Oct. 1862, p. 409.

In the foregoing remarks, the writer has refrained from touching upon those grave symptoms, dependent upon fracture of the spine, or injuries to viscera which often coexist with, although not referable to, luxation of the breast bone. From what has already been set forth, it will be seen that in the majority of instances of sternal luxation of which we possess authentic post-mortem observations, the cartilages of the second ribs have remained adherent to the manubrium, and not to the body of the bone. This fact appeared to the writer to be so significant, as to lead him to search for an anatomical explanation of this peculiarity. He accordingly, some years since, made a series of examinations upon the cadaver, with the view of ascertaining the exact nature of the articulation between the manubrium, the gladiolus, and the cartilages of the second ribs. The result of his investigations coincided in the main with the conclusions arrived at previously by Maisonneuve. As an accurate account of the anatomy of this articulation is not to the writer's knowledge to be found in any of the treatises on anatomy in the English language, the following observations are offered.

Anatomy of the Superior Sternal Articulation.—Prior to the appearance of M. Maisonneuve's paper, the structure of the articulation existing between the first and second sternal bones had been overlooked, or at all events had been imperfectly described. In general terms the articulation was considered as somewhat analogous to that which exists between the bodies of the vertebræ; and ossification of the connecting fibro-cartilage was supposed to occur generally in advanced life. It is probable, however, as has been already stated, that this ossification is of comparatively rare occurrence. According to the researches of Maisonneuve, the superior sternal articulation stands upon the limit of amphiarthrodial and diarthrodial joints. Its movements are obscure, yet real, and it is consequently susceptible of a true luxation. M. Maisonneuve states, that while in a certain number of cases, about two in five, the two upper pieces of the sternum are united by an interarticular fibro-cartilage analogous to the intervertebral; in the greater number of instances the articular surfaces of the first and second sternal bones are covered with a distinct incrusting or diarthrodial cartilage. Upon the second bone of the sternum this cartilage is continuous with the oblique facet for the articulation of the cartilage of the second rib. Upon the lower end of the manubrium the incrusting cartilage is continuous by a spur of fibrous tissue with the angle of the cartilage of the second rib; this latter is received into the notch formed by the manubrium above, and by the body of the sternum below. It results from these dispositions that the chondro-sternal articulation of the upper sternal bone is isolated from the sternal articulation properly so called. Also, that the cartilage of the second rib is much more strongly attached to the first than to the second sternal bone. Hence it is that in luxations of the body of the sternum forward the cartilage of the second rib remains adherent to the manubrium, and deserts the gladiolus.

Fibrous Sheaths.—The component portions of the breast bone are held together *anteriorly*, by a firm ligamentous sheath, composed of fibres of white tissue which cross each other in every direction, and are closely adherent to the surfaces of the bones and cartilages. The *posterior* sheath is composed chiefly of longitudinal bands of white fibrous tissue, which are but slightly adherent to the bones and chondro-sternal articulations. In luxation forward the anterior sheath is ruptured while the posterior is simply raised up and stripped from the bone for a short distance.

The following statement embodies the results of the examination by the writer of thirty sterna. More than forty additional specimens were also collected and studied by him, but the records of these last observations were mislaid, and the specimens themselves destroyed, during the writer's service in the army. But the general facts herewith presented held good in these instances also.

Tabular Statement showing in thirty instances the Nature of the Articulation between the Manubrium and Body of the Sternum; and that between the Sternum and Cartilages of the Second Ribs.

The sterna examined were those of—		
Adult males	19	
Adult females	8	
Newborn infants	3	
		—Total 30
Character of articulation between manubrium and body of sternum—		
Mobile, and elastic, in	27	
Firmly ossified; no movement, in	3	
		—Total 30
Structure of articulation between manubrium and body of sternum—		
One central synovial sac between first and second sternal bones	18	
Two synovial sacs separated by fibrous tissue between same	1	
One central synovial sac prolonged over two inferior chondro-sternal facets for second ribs	1	
Union by fibro-cartilage; no synovial sac	7	
Bony union complete	3	
		—Total 30

Mode of attachments of second costal cartilage to the manubrium—		
Spur of ligamentous tissue binding the second costal cartilage to the cartilage covering lower central facet of manubrium	27	
Vestiges of same, ossification of superior sternal articulation having taken place	2	
Cartilage of second rib bound by fibrous tissue to first and second sternal bones, at all points of juxtaposition	1	
		— Total 30
Nature of superior chondro-sternal articulation of second rib—		
Synovial sac, between superior facet of cartilage of second rib and manubrium	17	
Indistinct vestiges of same	5	
None; cartilages of second ribs attached to manubrium by fibro-cartilage	8	
		— Total 30
Nature of inferior chondro-sternal articulation of second rib—		
Synovial sac between inferior facet of cartilage of second rib, and body of sternum.	28	
Vestiges of same	1	
Complete ossification of articulation	1	
		— Total 30

From an examination of the foregoing statement it will be seen, that the proportion of instances in which fibrous union of the superior sternal articulation was found to exist by the writer, is rather less than that stated by Maisonneuve. The latter estimates its occurrence at about forty per cent., while, according to the writer's experience, it was met with in rather less than twenty-five per cent. of the whole number of sterna examined by him. On the other hand, the ratio of cases in which this joint was found to be provided with two articular cartilages, and an intervening synovial sac was proportionately increased. In only three cases out of the thirty did complete ossification exist, and in these instances the sterna were taken from the bodies of very old individuals. In many other sterna of advanced life, the normal characteristics of a mobile joint were preserved. It therefore seems to the writer probable that ossification of the superior sternal articulation, even in advanced life, is the exception, not the rule.

The presence of the fibro-catilaginous spur, which attaches the projecting angle of the second rib to the lower border of the manubrium is a noticeable fact. It was found to exist in a strongly marked degree in twenty-seven of the instances included in the table; and to a less marked degree in two others. In only one specimen was this ligament wanting, and in that one the cartilage of the rib was bound firmly by anterior and posterior ligaments to both the manubrium and gladiolus. In the table a comparison is offered as to the relative frequency of occurrence of synovial sacs between the upper facet of the costal cartilage and the manubrium; and the lower facet of the same cartilage and the body of the sternum. It will be seen that the synovial sac and double cartilage exists much more frequently in the latter articulation. In the former the synovial sac, when it does exist, is comparatively small in size, and often indistinct. From all of these considerations it would seem that the cartilage of the second rib is much more firmly attached to the manubrium than to the body of the sternum; and that this anatomical peculiarity explains the clinical fact, that, in the luxation forwards of the body of the sternum, the second rib remains adherent to the first, and parts from the second sternal bone.

Art. III.—*Solvents for Cholesterine, &c. &c.* By T. H. Buckler, M. D., of Baltimore.

It is believed that chloroform (terchloride of formyl) and succinate of the peroxide of iron will be found superior to any other agents as solvents for cholesterine and cholesteric fat, whether in or out of the living body. Chloroform taken into the stomach for the solution of gall-stones contained in the gall-bladder, and the continued use of succinate of iron to control the fatty or cholesteric diathesis and thereby prevent the formation of other calculi, have been invariably found by the writer trustworthy and successful after an experience of twenty years.

Turpentine and ether combined, as recommended by Durande, of Dijon, are the agents generally used as solvents of gall-stones. In regard to these remedies, we have only to say that a mass of cholesterine immersed in turpentine for three weeks had undergone no sensible loss of weight at the end of that time, and that however soluble this substance may be in ether, chloroform must always be found preferable, since it not only acts as the most rapid solvent, but at the same time produces the anæsthesia so necessary for the relief of the anguish invariably attendant on an acute attack of biliary colic.

In 1848 a mass of cholesterine of the size and shape of an ordinary sized hen's egg was taken from the gall-bladder of a woman who died at the Baltimore Almshouse of some other affection. It was readily separated by gentle traction with the fingers into seventy-five irregularly quadrangular bodies about the size of an ordinary garden pea when dried. These were subjected, in separate vials, to every agent deemed capable of exerting on them a solvent influence. The masses immersed in the various acids, nitro-muriatic amongst others, had undergone no sensible loss of weight at the end of several weeks. Finally a mass, weighing several grains, immersed in Edinburgh chloroform, underwent solution in a few minutes, leaving only a friable refuse resembling the cinder of burned paper.

Not long afterwards we were consulted in the case of a married lady, aged 38, the mother of five children. She was stout and strong, and had always enjoyed good health up to the time of the attack, which was ushered in by paroxysms of pain in the right hypochondriac region, amounting at times to positive anguish. On examination an irregular indurated tumour was felt through the walls of the abdomen, directly over the inferior margin of the liver. For some days this case was believed to be cancer of the liver, but as the paroxysms of pain were followed by jaundice, and the facies of the patient was not that of cancer, a conjecture was formed that the indurated tumour in question might be produced by a distended gall-bladder filled to a greater or less extent with biliary calculi and protruding beyond the inferior margin of the liver. A teaspoonful of chloroform was given by the stomach every hour while the pain lasted, and a teaspoonful only after each meal for a period of five days longer, when the indurated tumour, before described, entirely subsided, affording unmistakable evidence that the gall-stones, none of which were found in the stools, had been entirely dissolved out of the gall-bladder by the use of chloroform. About three months afterwards, this lady, who had enjoyed good health in the interval, was again seized with a paroxysm of anguish in the right hypochondriac region, owing evidently to a newly-formed gall-stone lodged in the trumpet-shaped mouth of the cystic duct. This being again dissolved by the use of chloroform, it was deemed desirable to administer some agent capable of controlling the cholesteric diathesis, and thereby prevent the further formation of biliary calculi. Seeing that the difficulty of dissolving gall-stones by any other agent than chloroform or ether grows out of the fact that cholesterine contains a very small amount of oxygen (from one and a half to two per cent., which is less than that of almost any other known substance), it seemed reasonable to suppose that a highly oxygenized compound would be found the best for attaining the object in view. Accordingly succinic acid and peroxide of iron were selected, on account of the large amount of oxygen contained in both of them. The hydrated succinate of the peroxide of iron was prepared by the eminent chemist Dr. David Stewart, of Baltimore. The lady, whose case we have just stated, made use of this salt as a permanent treatment to control the cholesteric diathesis, and thereby prevent the formation of gall-stones by destroying the raw material of which they are composed. She continued to take it for a period of six months, and resumed it at intervals afterwards in the following dose: ℞.—Hydrated succinate of the peroxide of iron, ℥iss; water, f℥viss.—M. S.—A teaspoonful after each meal. She has had no recurrence of the attacks since she commenced the use of this salt, and enjoys excellent health at the present time. Three other cases treated with chloroform were promptly relieved.

It is above all other agents the remedy for this disease, performing as it does the double work of a solvent and an anæsthetic. In all of these cases the succinate of iron was used as a permanent treatment after the chloroform had done its work. One other case terminated fatally, in which, in consultation, this treatment was advised but not carried out. The patient, a young and lovely married woman, Mrs. Z. P., residing at Sassafras, Eastern Shore of Maryland, aged twenty-one, was taken to a neighbouring city to consult two deservedly eminent medical gentlemen, who told her she was much too young and full of health to have biliary calculi; and one of them gave her *Budd on Diseases of the Liver* to read as proof of the correctness of their opinion. They told her husband the previous attack was hysterical, and advised that she should live generously, and go to the opera every night by way of amusement. She did go to the opera each night, and eat a supper on returning to her hotel. The night of the last supper she was seized, shortly after going to bed, with pain in the right side, and continued in great anguish until ten o'clock the following morning, when she died. A post-mortem examination disclosed a gall-stone about the size and shape of a common Alpine strawberry, which her husband sent me.

After what has been demonstrated by H. Bence Jones and others in reference to the permeability of tissues, there is every reason to believe that a sufficient quantity of chloroform would pass into the gall-bladder through the intervening parts alone to dissolve out gall-stones, provided its use were continued a sufficient length of time; but when we reflect that chloroform is taken directly from the stomach into the current of the circulation, and that a large portion of it is carried directly to the acini of the liver, where, mingling with the newly-formed bile, it passes with it into the gall-bladder, it is easily seen that gall-stones may be dissolved with as much certainty as if they had been placed in a bath of chloroform outside of the living body.

The use of succinate of iron may also be extended with advantage to the treatment of leuco-phlegmatic subjects in whom there is a tendency to a redundance of fatty tissue, and when there is reason to suspect that a deposit of the great disorganizer, cholesteric fat, may be forming about the heart and arteries, or in other structures. The popular idea is that a man must be very well because he is very fat, when directly the reverse is often the case, adipose deposit being so frequently a form of structural degeneration of the tissues. It may be useful to persons having a tendency to obesity, and save them the necessity of carrying out the too rigid and often injurious Banting system of diet.

The writer is not aware that this salt has ever been prepared by any one but Dr. Stewart and his brother, J. V. D. Stewart, of Baltimore, and it is perhaps important to state that it should be prepared in the hydrous state and kept constantly in a water-bath, for if dried it will never afterwards undergo a proper solution in water, but always form a gritty mixture.

This paper is only intended as a small contribution to the present knowledge of the subject, for the benefit of many better informed than the writer on this and all kindred topics, with the hope that they will communicate the results of their trials to the editor of the *American Journal of the Medical Sciences.*

ART. IV.—*On the Influence of Antecedent Disorders upon Organic Affections of the Heart and Brain.* By E. HOLDEN, M. D., of Newark, N. J.

THE following collection of cases has been made with a view to ascertain the bearing of familiar disorders upon subsequent organic disease of the heart or brain. While the results are somewhat unsatisfactory, many points of interest have been developed, and the results are therefore deemed of sufficient interest to be made public.

It should be premised that a majority of cases are from among selected and assured lives. The whole number of such being one thousand three hundred and thirty two, of which seven per cent. were from affections of the heart and six and seven-tenths per cent. from affections of the brain. Of the remaining cases, four hundred and thirty seven were from the books of county physicians, five per cent. from disease of the heart, and two and eight-tenths from diseases of the brain; three hundred are from general practice in the community, six per cent. from disease of heart, and four and six-tenths per cent. from affections of the brain.

The following remarks apply solely to the first mentioned. That the complicating question of hereditary taint and disposition may be removed as far as practicable, the first one hundred and eighty-four deaths from these forms of disease are exclusive of all in whose immediate families (parents, brothers, or sisters) more than one similar case had occurred. The bearing of rheumatism upon cardiac and cerebral disease presents itself as of special interest in such an investigation, particularly as regards the apparently innocent varieties in which no evidence of any primary inflammation of cardiac membranes has existed. Unfortunately the difficulties in the way of establishing connection in the latter are almost insuperable, and the present collection has furnished but meagre results in relation to it. Observation has been made, however, in a few cases with a view to this point, aside from those following, and out of twenty-three persons taken at random who had been subject to rheumatism, and who, though esteemed healthy, were found to have organic disease of the heart, fifteen had had no attack in ten years and four not within five years, none of them ever having shown evidence of pericardial or endocardial inflammation. Yet actual causative relation in these cases must of course be only conjectural, since there was nothing to show that the attacks of rheumatism were even precedent to the commencement of cardiac trouble. The known connection of this troublesome disease with organic affections of the heart through serous inflammation might, however, justify inference. That a more or less direct tendency to organic disease should be induced by the rheumatic poison seems probable when we consider the evident tendency to acute affections which exists during the progress of the primary disease, and that as moreover the absence of acute inflammation guarantees no security against the perverted nutrition, the calcareous deposit, the distorted or immovable articulation, it is, perhaps, unreasonable to suppose that the heart should escape some equally unfortunate though less rapid and less perceptible derangement.

Many cases have necessarily been met verifying familiar statistics. Results have, however, been sometimes puzzling; for example, out of fifty-one persons suffering from valvular disease of the heart, not hereinafter included, only twenty had ever been afflicted with rheumatism, while it is stated in a note to Dr. Flint's work on *Diseases of the Heart*, that seventy per cent. of cases of valvular disease were found to have been so preceded. Subsequent investigation showed, however, that of the remainder (thirty-one) a majority, probably, owed disease to hereditary predisposition. The apparent discrepancies in statements of observers, and especially of the somewhat earlier ones, in relation to coexistence of endocardial or pericardial inflammation with rheumatism, has led to examination of localities as a supposed reason. As might, perhaps, have been anticipated, the proportion was found to be far greater amidst the lumbering districts of Jefferson Co., Pa., and of the coast of Maine than elsewhere, and apparently irrespective of the violence of the rheumatic attack.

As instances of difference in statement alluded to, Dr. Levett found of seventy-two acute cases, less than one-fourth suffering from the cardiac complication. Dr. Wm. Budd (*Tweedie's System Pract. Med.*), out of forty-three carefully observed cases gives one-half as complicated; while Bouillaud, to whom is, perhaps, due the honour of first showing the connection between the two affections, says a great majority are thus afflicted.

I have seen it stated that heart complications in rheumatism are more liable to occur between the ages of fifteen and thirty, rarely above fifty; but when we reflect that this may be owing to the larger numbers of cases of rheumatism which occur between these periods, and that it is rare to find a first attack after fifty, we can scarcely infer that an attack outside of these limits is any less liable to be followed by untoward results. Indeed Dr. Fuller says, that, from observations of different gentlemen, one-third of all cases of complication occur under fifteen, one-fifth between fifteen and twenty, and one-tenth between twenty and twenty-five, diminishing rapidly after twenty-five. The cases included in the present article being solely from among adults, only partial comparison is possible; the number of *deaths* from inflammatory affections of the heart, irrespective of any connection with rheumatism, will be seen to be greatest between thirty and forty, and scarcely less in any ten years up to seventy. Dr. Watson says, the younger the party the more liable he will be to such heart trouble.

One thing, however, in regard to this point is probably true; the fibrinous exudation of inflammatory action before the age of fifteen will be less likely to result in adhesions and hypertrophy than after that age.

The frequency of connection of hypertrophy of the heart with some antecedent inflammatory action in its serous membranes, considered by Hope as almost invariable, may perhaps be estimated by reference to the cases given of this variety in the ensuing tables; only one in eighteen presenting any evidence of antecedent inflammatory action, or even of rheumatism, a result coinciding as negative testimony with the observations of Laennec and Bouilland (*Leçons Cliniques*, 1853), by whom it may be remarked pericardial adhesions were considered harmless. In reference to affections of the brain as a sequence of rheumatism, it may be briefly remarked that, out of the ninety deaths given, seven only had suffered at any previous period from rheumatism, or one in thirteen.

Affections of the kidneys, and their pathological relation to diseases of the heart, have always proven subjects of interest, yet the results here attained are simply unexpected, not important; even the inflammatory affections present but two instances of antecedent disease of the kidneys, and these had been consequent upon scarlatina. Of the cases of hypertrophy, three had been similarly preceded.

As regards pyæmia, not unfrequently a concomitant of pericarditis or endocarditis, it is not surprising that the present list shows nothing, the two cases of phlebitis antecedent to inflammatory affections, and one mentioned as preceding death from hypertrophy, are the only ones in which pyæmia could be even surmised, and are without particular value. Connection between various other depraved conditions of blood has been supposed to exist, as, for example, in scorbutus and purpura or variola, typhus and typhoid fever, yet experience with the first of these, at least, in the navy and army of the United States, leads me to the belief that such connection is no more than coincident; the proportion of temporary functional disorders being, as might be expected, very great. In the latter diseases, especially typhus and typhoid, softening of the heart, as is well known, is not very unfrequently a complication.

The occurrence of jaundice in three out of eighteen cases of hypertrophy (with and without dilatation), may be worth mention as compared with the received opinion that it occurs only in an exceedingly small proportion of cases. The subject of connection between disease of the nervous system, and especially asthma, and cardiac disease, presents itself in interest and importance second only to that of rheumatism.

Especially is this true in its bearing upon prognosis, and were it possible always to decide that a given case is one of asthma par excellence, a pure neurosis, the comfort and assurance afforded would be of benefit. Usually there are difficulties in the way, and we fail to give time and patience to discriminate between that which is properly asthma and that which is but a symptom of cardiac disease, or a form of suffocative bronchitis, which perhaps in this country most frequently receives the name. Yet the comparative imminency of danger in the three varieties is apparent. The conflicting opinions entertained regarding the tendency of asthma to produce disease of the heart, and shorten life (even among medical men), have possibly grown out of the indeterminate signification attached to the word.

Only by sifting out the cases which are doubtful, and carefully watching through a series of years the selected cases of this neurosis, could the liability to affections of the heart be calculated; a task of exceeding difficulty, and especially so when the statements of the party, as in the present instance, are indefinite or contradictory. Cases of true cardiac asthma, for example, the mere symptom of a carelessly overlooked organic disease of the heart, may be for years considered purely neurotic, and subsequent examination tempt us to mark as an effect what has been really a cause.

Inaccuracy of early diagnosis in cases of various organic disease of the lungs not unfrequently complicates inquiry or leads to false conclusions; but the objection is particularly true in cases where valvular disease has existed of such character as to cause obstruction to the free exit of blood from the cavities of the heart, and the usually ascribed results of asthma (dilatation) hypertrophy have succeeded. Reliable statistics on this subject are extremely meagre.

In connection with the present inquiry, I have collected but twenty-eight cases of asthma proper, and these chiefly in Maine and Ohio. The duration of the disease varied from three to twenty years, and in four only was there any evidence whatever of affection of the heart. Yet that even in pure asthma there exists a tendency to disease of the heart, though confessedly slowly developed, seems plausible, aside from statistics, for the following reasons.

1st. The intimate relation existing between the organs supplied by the pneumogastric nerve and the familiar example of cardiac derangement, as a consequence of gastric disorder, leads us to infer that a tetanoid condition of one set of filaments would in course of time seriously affect another.

2d. There not unfrequently results a condition of lung causing obstruction to the current of blood from the right ventricle of the heart, and where asthma has existed till advanced life there occurs exceeding frequency of cardiac disease, often at a stage incompatible with any idea of priority, a frequency suggesting a diminution of the vitality essential to repair with a previously existing aggressor, in other words, the action of a similar force with diminished resistance; an idea of this frequency may be gathered from the investigations of Maclachlan. (*Diseases of Advanced Life.*) Of two hundred autopsies of asthmatics over sixty years of age, every one had organic disease of organs of respiration or circulation. The direct mortality from asthma is well known; a modern writer (Salter) commences a chapter with this startling sentence, "Asthma never kills," and the author last mentioned states that out of two hundred cases only one death could be ascribed to asthma.

This peculiarity of the disease that it kills through organic changes in vital structures, and so rarely of itself, together with the slow progress of organic change in middle life, may have given rise to the familiar adage that it is a "lease for a long life."

The bearing of neuroses upon cardiac disease certainly presents a wide field of inquiry, yet none among them are of greater interest or importance than neurosis of the cardiac plexus—angina pectoris. The disputed nature of this affection, and the bearing of other neurotic affections, especially those involving important organs, open naturally the whole subject of neuralgias, and their influence in producing organic disease; and secondarily, the question of the bearing of functional disorders of the heart.

The indefinite ideas prevailing and growing out of differences of opinion on this subject may perhaps render a moment's digression excusable. That we are warranted in regarding angina as a neurosis, and the organic lesion as a coincidence or result, the investigations of Laennec, Chapman, Desportes, and others, seem to show. It is, moreover, of infrequent occurrence in organic disease of the heart, and in cases of death from a paroxysm, the lesions when found are variable, both in character and degree. Dr. Jones, in his admirable treatise on functional nervous disorders, entertaining the opinion that it is a pure neuralgia, discusses in brief (ch. xxvii.) the opposite opinions of Watson (*Practice*), and that of Stokes, Morgagni, Copland, Forbes, &c., and presents three important cases. In one, a patch of calcareous deposit was found in one of the sinuses of Valsalva; in another, atheromato-calcareous degeneration of the left coronary artery, to which the heart must have become habituated, and in the third, there appeared absolutely no cause for the fatal event.

A single case of this character, even if there were no others, and further testimony, weighs heavily as positive evidence against a host of negatives, and is, moreover, not open to the objection urged against the observations of Sir John Forbes, that "certain morbid conditions of the heart have only lately been brought to light, and so might reasonably have been overlooked."

Dr. Jones, continues—

> "The absence of any constant morbid condition, in instances where organic disease is found, and the frequent existence of all kinds of organic lesion, without trace of angina, incline me very much to the belief, that the essential circumstance in the disorder under consideration, is an attack of neuralgia, quite similar to that which would be unimportant elsewhere. This seems to be nearly the opinion entertained by Trousseau, and is further supported by complete cures of the disease, which have occasionally been accomplished."

In conceding this, we admit the lesion to be either simply coincident, or a result. That it is not the former would appear from the circumstance that careful observers have insisted that the structural change is invariably present in cases of this disease.

The query, however, which we present is this: Does the existence of a neurosis in any other part of the system (except perhaps of the organs supplied by the same pneumogastric) render a person liable to organic disease of the heart, through neurosis of the cardiac plexus? Of the seven fatal cases presented as from neurosis, three had been subject to various neuralgias antecedent to any symptom of angina pectoris, yet unfortunately so small a number proves nothing.

Of the other varieties, in only two was there neuralgia worthy of mention, and in both of these it was characterized as neuralgic rheumatism, one a case of valvular disease with phthisis, the other of valvular disease with Bright's disease of the kidneys.

That paroxysms of angina pectoris may supervene upon a persistent course of neurotic affections elsewhere, the clinical experience of most observers furnish examples. In the deranged condition produced by excessive use of tobacco, a pulmonary or gastric neuralgia is apt to be followed by a severe angina, though fortunately often amenable to treatment. M. Beau, in the *Journal of Practical Medicine and Surgery*, July, 1862, gives eight cases from this source, two of which proved fatal.

Malarious influence, upon occasions in which the nervous system seems peculiarly the object of attack, may, as is well known, produce cardiac as well as other neuroses and of an intractable variety. Coupling with this characteristic of certain nerve disorders the fact that any neurosis of the cardiac nerves is liable to be persistent and little amenable to treatment, and the liability to structural change or anticipating fatal issue is not improbable, and it is of little importance whether we consider the affection as purely of the sympathetic with constriction of the coronary arteries and imperfect supply of blood to the heart, as has been supposed, or of the cardiac nerve centres and nerves with paralysis of the heart.

As stated, the subject runs naturally into that of functional disorders and their bearing on organic disease. It has been asserted that clinical experience of observers has failed to sustain any connection between them. It is no place here to discuss such a question. It is well known that functional derangement may be frequent, persistent, and distressing, and yet after months of duration organic change cannot be detected, but only the most carefully collected cases, with notes of frequency and severity of attack and with especial view to circulatory and nervous condition aside from any poignancy of sensation, should establish as a fact immunity from danger of organic disease.

Desirable as it is and pardonable to assure a patient of his safety, and indeed in many cases correctly so to do, is the fact proven that such immunity exists—save, of course, in those cases in which the functional disorder is temporary with protracted interval, or where the sensations, though exquisitely poignant, are accompanied by inconsiderable actual derangement?

The hyperæsthesia of the cardiac nerves consequent upon debility, or the tetanoid condition which the experience of Rouget (*Journ. de la Phys.*, 1860, p. 509) would lead us to believe follows excessive use of tobacco, alike interfere with the delicate machinery of a vital organ, and the fatal cases upon record warrant at least a guarded opinion.

Remark will perhaps be pardonable in this connection upon the influence which organic lesions of the heart exercise on the brain, and *vice versâ*, although no notes have been taken on the subject.

It is a common belief that hypertrophy of the left ventricle is a prolific cause of cerebral congestion and apoplexy; but the researches of Walshe, while showing connection between apoplexy and heart disease, yet show that hypertrophy has but slight influence in the production of such disease. The fact that obstruction to the return of blood to the heart may be ample cause for apoplexy, especially when taken in connection with any morbid constitutional condition, and the fact, moreover, that with hypertrophy such obstruction often does actually exist, seems to furnish a more probable cause. Rochoux states (*Dict. de Méd.*, iii. 503) that out of forty-two cases of apoplexy analyzed, hypertrophy was found in only three, a proportion, as remarked by Watson, merely coincident. The opinion entertained by Hope that aortic valvular lesion accompanied by hypertrophy involves liability to apoplexy seems to be disproved by more modern observers. Dr. Flint, for example, out of seventy-two cases analyzed found such lesion in only seven; and these occurring at ages in which apoplexy is most apt to occur irrespective of heart disease.

A diseased condition of the brain itself is, perhaps, generally considered the most frequent predisposing condition.

Dr. Clendenning says that out of five hundred dissections of apoplectic cases, one hundred and sixty-six had disease of the heart in some form.

The comparative ages of persons given below, the bearing of occupation, and in affections of the brain that of physical conformation, may be worthy of consideration.

The deductions are made from tables in which the assigned cause of death; the actual cause; the diseases and causes of death of parents; the antecedent diseases of party; the results of autopsy; the age and occupation, formed separate columns, and were objects of special investigation.

The occupation of parties may be thus tabulated:—

	Heart Disease.	Apoplexy.
Engaged in mercantile pursuits	61	53
Professional men	10	6
Mechanics	12	3

	Heart Disease.	Apoplexy.
Farmers	4	4
Mariners	1	5
Secretaries	—	4
Lottery dealer	1	—
Butchers, hotel keepers, etc. etc., unknown	5	15

First, with regard to disease of heart. No previous disorder was suspected in fifty-five. No disease of any kind sufficient to require attendance of a medical man ever suffered from (statement of party prior to death) in forty-three; twenty-four had had palpitation or other symptom indicative of disease of heart.

Of the first ninety-four, twenty-two were inflammatory affections, *i. e.*, pericarditis, endocarditis, etc.

Every recorded death assigned to rheumatism, save one, typhoid in nature, proved to be from affection of the heart. Of these, six were inflammatory; one with valvular and paraplegic complications; one was preceded by hypertrophy, a probable result of former disease; one was evidently a neurosis, while of the inflammatory affections, not assigned to rheumatic origin, four had at times suffered from rheumatism, or rather four only mention the fact.

Of the number not thus assigned—

1 was preceded by no disease save scarlatina ten years before; æt. 39; death arising after pericarditis from effusion.

1 was preceded by no disease save angular curvature of the spine; æt. 45.

1 was preceded by slight "asthma" (?) several years, and believed cured.

1 had never been sick, but his mother had suffered from heart disease; æt. 39.

1 was preceded twenty-three years by scarlatina, and no other disease (?) æt. 32.

2 were preceded about three months by phlebitis; æt. 47 and 56.

1 had never been ill, and no mention of disease is made in family save death of mother from consumption; æt. 37.

In the remaining cases of inflammatory disease no illness serious enough to demand medical treatment had occurred.

3 were between 20 and 30
6 " " 30 " 40
5 " " 40 " 50
5 were between 50 and 60
3 " " 60 " 70

Out of the first collection of 94 cases, in 15 the fatal affection had been preceded by rheumatism in some form. Of these—

1 died of fatty degeneration; æt. 72.

4 of valvular disease, æt. 45, 52, 55, and 50.

4 of inflammatory disease, æt. 49, 44, 45, and 23.

2 of complicating Bright's disease of kidneys; æt. 48 and 59.

In 3 the exact affection was not satisfactorily diagnosed; æt. 52, 58, and 45.

1 was a neurosis.

Thus the cases of valvular disease following rheumatism equalled those of inflammatory nature; but how far dependent upon any previous attack of rheumatism, or influence of the rheumatic poison, it is impossible to decide.

Of the whole number now under consideration (94), 15 died of valvular disease, diagnosed previous to death, and with which no complication is mentioned. 1 was complicated with pericarditis, the ultimate cause of death: 1 with phthisis; 1 with hypertrophy; 1 with disease of the kidneys.

Of those who suffered from this particular disease (valvular) in 4 had the fatal issue been preceded by rheumatism; in 1 by cough for thirty-five years (æt. 77); and in 1 by intermission of pulse, which partly, he was assured by his physician, was owing to dyspepsia (æt. 53); 1 had had violent palpitation at times for six months, and been subject to sick headache thirteen years (æt. 57); 1 had complained long of palpitation, but was assured that it was owing to plethora (æt. 68); another had complained in a similar manner, having also expectorated blood (æt. 50); 1 had suffered from slight dyspepsia (this party's father had died of apoplexy, and his mother of consumption), æt. 60; 1 had suffered from no disease, and no death had occurred in his family save his mother, from consumption, æt 45; 2 others, having never suffered from disease themselves, state, the first, that a brother had died of epilepsy at 48, and another of rheumatism; the second, that the father had died of dropsy, and a sister had died suddenly, æt. 45 and 65.

Of the whole number of valvular diseases, 1 only occurred below the age of 40, and that was at 39; 6 between 40 and 50 (5 of these 45, the other 50); 8 between 50 and 60 (2 of these at 60); 3 between 60 and 70; 1 between 70 and 80. The larger proportion, therefore, died between 45 and 60.

Of the whole number under consideration (94), 18 were from hypertrophy; 12 were apparently uncomplicated with disease of other organ, or other disease of the heart itself. 6 were complicated as follows:—

1 with inflammatory affection of the heart preceded by no disease; æt. 35.
1 with same, but preceded 10 years by scarlatina; æt. 39.
1 preceded by long course of intemperance; æt. 50.
1 with serious valvular lesion, but preceded by no disease of sufficient moment to merit attention; æt. 54.
1 with unusual dilatation, even for this class of affection, was complicated with endocarditis, and preceded by phlebitis three months, at which time, having been forced to great exertion, cardiac disease appeared to develop; æt. 47. A brother of this person died of "some disease resulting in dropsy, and another of phthisis.
1 in whom there existed suspicions of a long course of intemperance, and ten years of suffering from dyspnœa, palpitation, etc., was found to have pulmonary apoplexy; æt. 33.

In only 3 was dilatation at all remarkable, 7 had previous to death certified to a state of uninterrupted health, *i. e.*, so far as medical attention was concerned.

The remaining 11 suffered previous disease as follows:—

1 in whom autopsy revealed Quain's degeneration, had three months before death suffered from bilious colic, followed by jaundice, and on one occasion had suffered severely from palpitation; æt. 39 (merchant).

1 in whom hypertrophy was excessive, had experienced no especial disease, but had noticed that for several months prior to death his pulse had been between 88 and 95; æt. 40 (an editor).

2 had suffered from jaundice and obstructed gall-ducts; 1 of these being accompanied by excessive dilatation; æt. 49 and 53.

1 had had mild rheumatism occasionally, usual pulse 72; æt. 72.

1 had had scarlatina several years before; æt. 39.

1 had had slight cough for a long time; æt. 46.

1 had had nephralgia and calculus 23 years before death; æt. 75.

1 had suffered from dyspnœa and palpitation for a long time; æt. 45.

2 had been intemperate, ages 50.

The only cases among these latter 11 that seem to furnish coincident precursors are the three in whom jaundice occurred.

Of the cases of hypertrophy, 5 occurred between 30 and 40; 7 between 40 and 50; 3 between 50 and 60; 3 between 70 and 80; 3 were accompanied by muscular dilatation; 5 were owing to almost purely muscular hypertrophy; 1 was styled Quain's degeneration; 4 were ordinary fatty degeneration; 5 were indefinite.

One solitary case of softening of the heart occurred. The left ventricle exhibiting peculiar friability, and degeneration (Dr. Peaslee's case); no previous disease or premonitory symptom; death instantaneous; æt. 46. 1 case of atrophy only, heart apparently normal in other respects, no previous disease or premonitory threatening; death very sudden; æt. 47.

1 case of rupture of the heart occurred, the heart being found in condition of fatty degeneration; no previous disease or premonition; æt. 60.

7 cases of the whole number were doubtless neuroses; 3 had suffered from antecedent neuralgia, 1 attributing his neuralgic symptoms to tobacco which he had been obliged to forego; 4 had prolonged premonitory symptoms, the others only suffering a very few minutes; 2 had been subject to dyspepsia; 2 had overheated and over-exerted themselves during the twelve hours prior to death. No disease of heart, lungs, or brain had occurred in the parents of any of these save one, whose mother had died of some cerebral with uterine disease, and brother of cerebro-spinal difficulty, the former a cancerous disease, the latter probably tuberculous.

The ages were as follows: 3 between 40 and 50; 3 between 50 and 60; 1 between 60 and 70. It is worthy of remark that in the many cases of the various affections of the heart detailed, so few had attributed the premonitory symptoms to asthma, since the impression is prevalent to a greater or less degree, that asthma is far less "dangerous" than any cardiac disease, and it is natural for man to under, rather than overrate the danger of his condition.

Out of the 1332 cases in which written testimony was examined, only 3 were ascribed to asthma, and in one, the symptoms indicated serious valvular disease and aneurism of aorta. He had had, however, but one attack of his so-called asthma previous to the fatal one, but had at one time been supposed to be the victim of "galloping consumption;" usual pulse 80; æt. 52; hotel-keeper.

One, a stout robust man, laboured under hypertrophy; he had suffered from no other disease; æt. 50; jeweller.

One had presented no indication of disease of the heart until four days prior to death, and no disease had ever been experienced that at all bore upon the disease. His father died of "asthma;" it is a noticeable fact that these, the only deaths ascribed to asthma, did actually have heart affection complicated with them.

A few deductions may perhaps be made with advantage from the whole number of cases, in regard to the suddenness with which the disease terminated, the autopsies, and the character and completeness of the information elicited in each case.

In regard to suddenness, 22 are reported as "very sudden," "instantaneous," and as having "dropped dead." In some, the time is stated as a few minutes, a few seconds, &c., and in 12 symptoms of approaching dissolution are pronounced wanting; in the remainder, the period of illness varied from a few hours to several years. In regard to autopsies, full information has been filed in writing from the attending physician and those performing the post-mortem examination. In regard to information, especially that relating to personal and family history: this has been given as far as inquiry could elicit it, and where no disease in the family is given, it is distinctly stated that there is none, and has been none of importance.

The cases remaining to be considered are far less complete than the preceding, and are derived from different sources. Out of 737 deaths occurring in the practice of county physicians (all "county cases"), there were 23 arising from affections of the heart, exclusive of the more doubtful; 10 had suffered at times from dyspnœa, palpitation, and, in one case, neuralgic pains in the præcordia. Five of these died under the influence of excitement either from mental causes or violent exertion; the others under no obvious excitement.

Of the whole number, 23, fifteen died suddenly—*i. e.*, within a few minutes after falling. The number of autopsies among these was small, the prevalent disposition being manifest to attribute every uncertain case to some affection of the heart. In all included below, however, there is reasonable freedom from doubt. The ages are as follows:—

1 below the age of 20
4 between 20 and 30
3 " 30 " 40
1 " 40 " 50
1 between 50 and 60
3 " 60 " 70
2 " 70 " 80
7, ages not given.

None of these were inflammatory in nature; 1 was attributed to asthma, 3 to neurosthenia, 1 to hypertrophy and valvular disease. Occupation unknown; family history unknown. It is worthy of remark, that whereas the first 94 cases are from the higher walks of life, these are from the lower; while the following are selected more indiscriminately than either, and from both male and female throughout the community.

Of 300 deaths there were 18 from some disease of the heart, including the usual proportion of inflammatory cases.

Males 10, as follows:—

3 between 20 and 30
2 " 40 " 50
1 " 50 " 60
2 between 60 and 70
2 above 70

Females 8, as follows:—

1 between 20 and 30
2 " 30 " 40
4 between 40 and 50
1 " 50 " 60

Specific affections not satisfactorily designated.

That the results thus far arrived at in regard to one important point, namely, the age at which the larger number died, may be compared with the usual opinion on the subject, it will be necessary to consolidate the statistics given; upon doing so, we find the following:—

8 between 20 and 30
20 " 30 " 40
30 " 40 " 50
29 " 50 " 60
16 between 60 and 70
8 " 70 " 80
15 ages not given.

Let this statement be now compared with some available statistics of mortality among adults—of Philadelphia, for example. The records of the Health Office for 1853 show as follows, exclusive of deaths among returned and wounded soldiers, and in the various army hospitals.

There were 6445 deaths, of which number 250 are reported to have died of disease of the heart in some form (3.87 per cent.); a small per cent. when compared with that found above. The following tabular list may show the character of the report:—

232 are reported "Disease of the heart."
2 " Degeneration of the heart.
18 " Inflammation of the heart.

Ages of the first:—

34 between 20 and 30
35 " 30 " 40
41 " 40 " 50
45 " 50 " 60
33 between 60 and 70
31 " 70 " 80
11 " 80 " 90
2 " 90 " 100

Ages of the second:—
1 between 30 and 40
1 between 70 and 80

Of the third:—
6 between 20 and 30
2 “ 30 “ 40
2 “ 40 “ 50
1 between 50 and 60
3 “ 60 “ 70
2 “ 70 “ 80

Making a total of
40 between 20 and 30
38 “ 30 “ 40
43 “ 40 “ 50
46 “ 50 “ 60
36 between 60 and 70
34 “ 70 “ 80
11 “ 80 “ 90
2 “ 90 “ 100

In regard to the cases of apoplexy, or similar affection of the brain, it is proper to state that the 1332 deaths exclude all doubtful, and *all in whose families more than one case had previously occurred.* There were 10 mentioned as congestion of the brain, of which number 3 were from coup de soleil; 3 were stated simply to have been sudden; 6 were sick from thirty hours to five days; 1 was ill ten days.

In 74 the fatal stroke was the first one. The suddenness varied considerably, being from a few moments to hours, and even months, more dying on the third day than any other (20 per cent.). In four cases only had either parent or any member of the family suffered from any similar disease. In one a brother was insane; in one a sister had died of brain-fever; in two some members of the family had died of heart-disease. 16 only were stout and inclined to corpulency; 26 were stated to be not corpulent (nor florid), and of medium size and weight; 8, beside the latter, are stated to be thin, slender, &c. In a majority of the remainder there is evidence that they were not especially inclined to corpulency; 7 cases were preceded by rheumatism; 7 had been subject to headache of considerable severity and frequency. Many had complained of dyspepsia and hemorrhoids, and several had suffered from pulmonary hemorrhage; but in only three had there been any suspicion or symptom of any cardiac complication. Many suffered partial or complete paralysis previous to death.

If we now compare the above result with statistics from other sources, as before, we find the following (mortuary record of Philadelphia for 1863), exclusive of deaths among soldiers, and enumerating adult deaths only: Apoplexy, 186; congestion of brain, 133—total, 319.

Of those who died of apoplexy, there were
9 between 20 and 30
29 “ 30 “ 40
24 “ 40 “ 50
40 “ 50 “ 60
48 between 60 and 70
27 “ 70 “ 80
12 “ 80 “ 90
1 “ 90 “ 100

Of those who died of congestion, there were
41 between 20 and 30
29 “ 30 “ 40
24 “ 40 “ 50
11 “ 50 “ 60
16 between 60 and 70
9 “ 70 “ 80
2 “ 80 “ 90
1 “ 90 “ 100

The latter being, as will be seen at a glance, about equal to the former up to the age of 50, when the former increases somewhat as the latter decreases. The per cent. of deaths by the Philadelphia tables is 4.9; by present cases 5.5.

Art. V.—*Contributions to the Statistics of Human Growth.*

By W. S. W. Ruschenberger, M. D., U. S. Navy.

Durable physical efficiency is an essential qualification of all persons selected to serve in the military establishment of the nation. For this reason it is desirable to ascertain the reliable indications of physical strength and longevity in adolescents and adults of different ages. Amongst those most relied upon in the examination of recruits for the army and navy are stature, weight, and pulmonary capacity. A standard of height and weight is established for comparison by most nations. Those who fall below it are not received into military service.

The total height of an individual is not a positive indication of strength or power of endurance. Dr. B. A. Gould states, in a paper "on the Stature of American Soldiers," read at a meeting of the "National Academy of Sciences," that the "tall men did not wear as well as the shorter."

It seems probable that the length of the cerebro-spinal column may be a more valuable element in estimating the physical qualifications of a recruit than the total stature. Observation has led me to conjecture that, as a rule, men of average height, made up of a long trunk and comparatively short lower extremities, possess greater power to endure with impunity great labour and exposure to vicissitudes of all kinds than men who have comparatively long lower limbs and short trunks. A long and otherwise fully developed trunk affords more space for the accommodation of organs essential to life than one of smaller dimensions. The size of the contained organs is proportionate to the capacity of the cavities provided for them; and it may be assumed that, all things being equal, the size of an organ is a measure of its power.

To ascertain proximately the difference between the length of the cerebro-spinal column of boys of the same stature, the candidates for admission into the Naval Academy at Annapolis, Md., in July and September, 1866, were measured.

During the examination of July 164 candidates, between the ages of fourteen and eighteen years, were weighed and measured carefully to ascertain the height of the perineum, of the shoulder, and of the vertex. In this mensuration I was assisted by surgeons David Harlan and R. C. Dean and assistant surgeon James M. Flint of the navy.

Each candidate was perfectly nude during the inspection.

In September, 65 candidates were measured in the same manner at my request, by surgeon Harlan, aided by passed-assistant surgeon Joseph Hugg, and assistant surgeons John S. Ramsey and Wm. F. Terry of the navy. Twelve of these candidates had been measured in July.

The measurements of these 217 boys, or adolescents, have been collated and arranged in tables. In the first those of the same stature are classed together, in the second those of the same age, and in the third the measurements in July and September of the twelve candidates twice examined are contrasted, showing the progress of growth in two months.

The first table shows that the length of the cerebro-spinal column in adolescents of the same stature differs from one-half to three inches. One candidate, whose stature is 73¼ inches, has a cerebro-spinal column a half inch shorter than another whose stature is 68 inches, or 5¼ inches less. It is probable that similar differences will be found to exist among adults of the same stature.

The average weight to the inch of stature of the 216 weighed is 1.65 lbs. The lowest average weight to the inch of stature is 1.17 lbs., and the highest 2.10 lbs. Of the 216, only eight averaged two pounds and upwards to the inch of stature. From these measurements it may be assumed that the fair standard weight of candidates for admission into the Naval Academy should be one pound and a half to each inch of stature. For example, an individual sixty inches in height should weigh ninety pounds.

The difference of circumference of the chest, measured over the nipples with arms pendent, when fully expanded and at the close of expiration, varied from 1¼ to 4 inches. There seems to be no relation between pulmonary capacity thus measured and stature or weight. In some instances the heaviest, and in others the lightest of the same stature, had the largest thoracic circumference and expansibility.

The second table, in which the candidates of the same age are classed together, shows that growth is very irregular, and that age cannot be taken as an indication of the stature of adolescents. The extreme difference of the height of eight boys of the age of 16 years and 2 months was found to be 12½ inches; and of fourteen boys aged 16 years and 6 months the difference between the shortest and tallest 9¼ inches. In the first example the shortest and tallest were both born in New York, and the second, the shortest, was born in Indiana, and the tallest in Ohio.

Possibly the growth-impulse impressed upon the germ at the moment of conception continues, *cæteris paribus*, until growth ceases. There is reason to conjecture that this growth impulse is dependent, in a degree at least, upon the age and vigour of the parents at the time of impregnation.[1]

The third table shows that, in two months, eleven boys increased in weight, varying from two to nine pounds, and also in thoracic circumference and expansibility, the increase varying from one quarter of an inch to four inches. In one the measurements indicate loss of weight with increase of stature and pulmonary capacity.

---

[1] See Fecundity, Fertility, and Sterility, and allied topics. By J. Matthews Duncan. 8vo. Edinburgh, 1866.

The average height and weight of the human body at different ages has not been accurately determined.

Mr. Danson[1] gives the average height and weight of 100 boys of 18 years of age, as follows :—

HEIGHT.						
Age.	Average.	Maximum.	Minimum.	Maximum over average.	Minimum under average.	Maximum over minimum.
years. 18	inches. 64.34	inches. 71	inches. 58½	inches. 6.66	inches. 5.84	inches. 12½
WEIGHT.						
	stone. lbs. 8 10.79 or 122	stone. lbs. 10 13 or 153	stone. lbs. 6 6 or 90	stone. lbs. 2 2.21 or 30	stone. lbs. 2 4.79 or 32	stone. lbs. 4 7 or 63

Quetelet[2] gives the following averages of Belgian recruits :—

AGE.	HEIGHT.	WEIGHT.
years.	inches.	lbs. avoir.
16	57	109
17	64.3	116
18	65.2	126

Mr. Danson thinks "there is good reason for supposing that even among men of the same class and the same habits, in the same locality, those who attain a given age in one year have not the same, or very nearly the same, average height or weight, as those who attain the same age in years preceding or following." These variations have been attributed to scarcity or abundance of food in the birth years of the individuals measured during adolescence or adult age.

Mr. James Harrison carefully examined 1270 young persons of both sexes, employed in certain English manufactories, with a view to ascertain their influence on health. The following data are derived from his measurement of stature :—[3]

---

[1] Statistical observations relative to the growth of the human body (males) in height and weight, from eighteen to thirty years of age, as illustrated by the records of the Borough Gaol of Liverpool. By J. T. Danson. Published in the *Journal of the Statistical Society of London*, vol xxv. p. 20, March, 1862.

[2] Taken from *A Manual of Practical Hygiene*, prepared for use in the medical service of the army. By Edmund A. Parkes, M. D., F. R. S., etc., second edition. London, 1866. Page 501.

[3] Edinburgh Medical and Surgical Journal, 1835, vol. xliv. page 425.

Age.	Number Examined.	Average Stature Inches.
From 13 to 14	192	54½
" 14 " 15	197	55
" 15 " 16	186	58
" 16 " 17	131	60¾
" 17 " 18	151	60¼

The average stature of persons of 18 years, resulting from the observations of Mr. James Harrison, is 60¾ or 60.75 inches; the measurements by Mr. Danson give 64.34, and those by Quetelet 65.2.

The average height and weight of American adolescents, according to the measurements at the Naval Academy, are greater than the averages given by the authors named, as the following table shows:—

STATURE.					WEIGHT.		
Age.	Number examined.	Minimum height.	Maximum height.	Average height.	Minimum weight.	Maximum weight.	Average weight.
		inches.	inches	inches.	lbs.	lbs.	lbs.
14 to 15	28	55¾	67¾	60.70	63	121	97.44
15 " 16	31	54½	69	63.87	73	136½	107.93
16 " 17	82[1]	58½	73¼	64.24	81½	145	110.20
17 " 18	73	61¼	69½	65.44	88	137	115.33

Art. VI.—*Case of Axillary Aneurism: Successful Ligation of Left Subclavian between the Scaleni; Suppuration of the Tumour; Hemorrhage on the 43d day; Gangrene of Limb: Ligation of Subscapular Artery; Amputation of Arm at upper third; Hemorrhage on 67th day; Removal of Humerus at the Joint; Recovery.* By Thomas George Morton, M. D., one of the Attending Surgeons of the Pennsylvania Hospital, and one of the Surgeons of the Wills (Ophthalmic) Hospital, Philadelphia. (With four wood-cuts.)

The following case of aneurism involving the axillary artery has been reported at considerable length, on account of the comparative rarity of the disease, as well as the operation performed; while the very interesting series of events which followed, and secondary operations which were required, render some minuteness unavoidable.

Only two cases have been recorded where the subclavian artery has been ligated in this city, and both of these operations were performed for the relief of aneurisms of traumatic origin. The first has been reported by Professor Gibson, in 1828,[1] the axillary artery was ruptured during the reduction of a dislocated humerus of nine weeks' standing; the subclavian was ligated outside of the scalenus, erysipelas and incipient gangrene followed, and the patient died on the seventh day.

---

[1] The weight of one of these was not noted; therefore the weights of eighty-one were used in computing the average weight.

The history of the second case was read before the College of Physicians, by Dr. H. E. Drayton,[2] in October, 1859; the patient was admitted into the Episcopal Hospital, with "obscure injuries about the shoulder and side caused by a recent fall;" a pulsating tumour rapidly developed, ligation of the subclavian was performed which resulted fatally from pyæmia on the twenty-second day.

During the late war the subclavian was ligated more frequently (excepting the carotid, femoral, and brachial) than any other artery;[3] one of these operations was performed by myself, at the "Mower" hospital, Chestnut Hill, during my service as consulting surgeon; sloughing and hemorrhage followed a gunshot wound of the armpit; the axillary was tied; hemorrhage recurring, I ligated the third portion of the subclavian.

I am under obligations to Dr. Barnes, Surgeon-General U. S. A., for the following report, furnished me by Brevet-Major G. A. Otis, Assistant Surgeon U. S. A., Curator of the Army Medical Museum, of the operations performed in the Military Hospitals in this Department.

> "Of the thirty-five cases of ligation of the subclavian recorded in Circular No. 6, S. G. O., 1865, seven occurred in Philadelphia. Six of these cases terminated fatally.
>
> "The operators were Gross, Coolidge, Hopkinson, Kennedy, Levis, Wells, and yourself. The successful case was Levis, done at Christian St. (Hospital). Primary amputation of the arm, June 19th, 1864, on the field; ligation of axillary by Dr. Boyd, July 25th; secondary hemorrhage, ligation of subclavian over first rib, Aug. 8th; discharged cured, April 6th, 1865.
>
> "Your case was a secondary ligation at 'Mower,' terminating fatally July 1st, 1864. It furnished specimen No. 2545, to the Army Medical Museum.
>
> "A fatal case, not recorded in Circular No. 6, occurred at Philadelphia, Sept. 17th, 1864, at Satterlee Hospital."

Mr. Crisp,[4] in a table of 551 spontaneous aneurisms, reports 18 only of the axillary artery; and among 364 preparations of aneurism, carefully examined by him in the various museums of London, 8 only were found of the axillary artery.

Dr. Wm. Pepper, Curator of the Penna. Hospital Museum, informs me that he has been unable to find a single specimen of spontaneous axillary aneurism in the museums of this city.

CASE. Francis McKoen, aged 51, a stone-mason, born in Ireland, was brought to the Pennsylvania Hospital, in an ambulance, on the 7th of

---

[1] American Journal Med. Sci., May, 1828, p. 136, with two plates.

[2] American Journ. Med. Sci., vol. xxxviii. p. 402, 1859.

[3] Circular No. 6, S. G. O., 1865, p. 78.

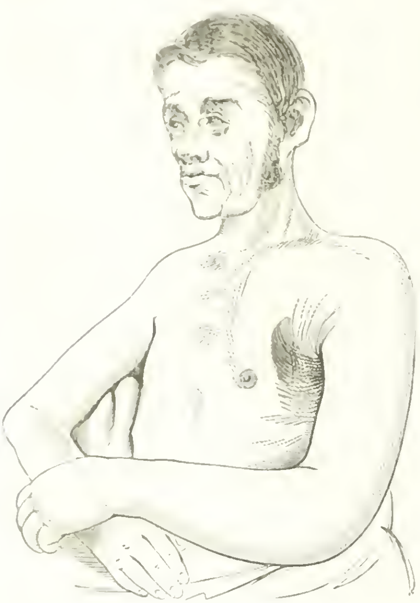
[4] Diseases of the Bloodvessels.

November, 1866, and admitted into the lower surgical ward on account of a large pulsating tumour of the left axilla.

About the first of June, the patient's attention was directed to an unpleasant tingling and numb sensation, along the outside of the arm and forearm, and especially in the course of the little finger, "as if the parts were asleep; this gradually increased, and soon the entire limb to the region of the deltoid became involved. In the latter part of the month of August, he discovered while bathing a tumour in the armpit about the size of a chicken egg, which was painless on pressure, and gave such a trifling amount of pain except when the arm hung down, that he was able to perform as usual his heavy work until the early part of September, when he sought medical assistance.

About the first of October, the pain in the arm grew worse, and the tumour increased rapidly in size; soon the axilla was filled up, and with this increase, intense pain throughout the entire limb was experienced, which was afterwards of the most excruciating character; loss of all sensation and motion followed, with great œdema of the arm; powerful opiates were taken, and sedative lotions to the tumour afforded little or no relief.

Fig. 1.



On examination a strongly pulsating tumour was found, see Fig. 1, which distended the axillary region to such an extent that the arm was forced away from the side, and which also produced considerable elevation of the shoulder; the tumour extended across the chest towards the sternum, and could be felt above the clavicle, but the subclavian space seemed uninvolved. The skin covering the axillary portion of the tumour was so attenuated that bursting of the tissues seemed imminent; already several ulcerated points gave vent to a few drops of softened clot of blood. The temperature of the arm, and especially the hand, was considerably diminished, and no pulse could be felt in the radial or brachial arteries; the limb was at least double the natural size, on account of the œdematous effusion. The least movement of the arm which had been devoid of all sensation and voluntary motion for three weeks, produced intense pain, which was referred principally to the region of the shoulder. The subclavian artery was found deeply situated, and when compressed upon the first rib entirely controlled all pulsation and thrill; the former extended to every portion of the tumour and could be seen at a considerable distance, while the latter was most distinct at the more prominent portion of the axilla. The disease was evidently aneurism involving the axillary artery, and from the history appeared to be of that variety described as consecutive diffused, the effusion resulting from the rupture of a circumscribed aneurism.

While the disease was increasing, it was evident that before long the patient would perish from hemorrhage, unless the flow of blood through the tumour were arrested.

Since spontaneous coagulation in the aneurism was hardly possible, and operative measures alone held out a chance for what otherwise would soon certainly prove fatal; it became a question as to the course to be pursued.

Amputation at the shoulder-joint with ligation of the axillary high up, would under some circumstances have been proper, since it was likely that the arm would never be of service, on account of the permanent injury which the nerves had sustained from the pressure of the tumour; but the risks from hemorrhage would be great, for the subclavian was deeply situated, and pressure upon it could hardly have been depended upon to control hemorrhage while seeking to ligate after an amputation.

The plan recommended by Mr. Syme[1] of making a free incision into the tumour, and evacuating the contents, first controlling the flow to the part by making an incision along the outer edge of the sterno-mastoid muscle, through the platysma myoides and fascia of the neck, so as to allow a finger to be pushed down to the situation where the subclavian artery issues from, and under the scalenus anticus, and lies upon the first rib, and then ligating the axillary above and below the seat of disease, did not appear practicable in the present instance, on account of the very great uncertainty as to the situation of the original disease, whether above, beneath, or below the pectoralis, the great size of the tumour, and marked pulsation in every part. While the tumour being above the clavicle and close to the third part of the subclavian, ligation of this vessel would likely be found necessary after all. Ligation of the subclavian was decided upon as offering a reasonable chance of success; although it seemed quite probable that suppuration of the tumour would follow, since the blood was simply poured out into the tissues from the ruptured aneurism, a laminated clot not having formed except perhaps in that portion of the tumour which formed the original aneurismal disease.

The patient was placed upon a good nutritious diet, and to diminish the action of the heart, five drops of the tincture of veratrum viride were ordered four times a day.

Nov. 14. Assisted by my colleagues, Drs. Hunt and Agnew, before the clinical class of the hospital I commenced the operation by making an incision along the upper part of the clavicle four inches in length, the skin having been drawn down over the chest; the external jugular vein swelled up enormously and seemed as if it might give some trouble. Two small arteries required ligation; then with careful division and tearing the subclavian triangle was soon exposed, the omo-hyoid was drawn upwards and the scalenus anticus traced down to the first rib; the artery now appeared to lie immediately under the finger; with a little scratching the vessel itself seemed to be at the bottom of the wound. An aneurismal needle with ligature attached was passed, not tightened, but merely drawn upwards when it was found that the ligature had been passed under the lower cord of the plexus of nerves which laid above the vessel. The artery was now felt more deeply situated, the ligature was withdrawn and the vessel found about a half inch beyond, but the aneurismal tumour being in close proximity, it was determined to divide the scalenus and to place the ligature upon the artery in its second portion. The division of this muscle was readily accomplished, and the ligature was placed under the vessel, being more than three inches below the surface. With tightening of the ligature there was immediate cessation of all sound and pulsation. The wound was brought together with four leaden sutures, the skin moistened with olive oil, and dry charpie placed on the parts, with a bandage to keep the arm and dressings in place.

---

[1] Med.-Chir. Trans., vol. xliii. p. 137.

The patient was somewhat exhausted from the protracted operation, which lasted nearly one hour; but soon rallied after the administration of some brandy and water; there was hardly any blood lost during the operation, and fortunately no venous trunk was wounded.

Nov. 14. Evening: pulse 132; quite comfortable; has been asleep; had no pain; taken freely of cold milk and arrowroot; about a teaspoonful of blood has oozed since noon; half a grain of morphia to be taken at 10 P. M. and to be repeated if necessary.

15*th.* Pulse 124; skin natural; tongue a little coated; slept well; general condition good; no swelling or redness about the wound. Evening: The bandage was cut away and fresh charpie applied, the skin being oiled; wound looks very well.

16*th.* Pulse 120; very comfortable; tongue a little thick; sleeps much of the time; has had no pain in the arm since the operation; small quantity of healthy pus exuding by the side of the subclavian ligature; has a slight cough.

17*th.* Pulse 110; skin and tongue good; removed the sutures and found the wound united; cough, but no expectoration; some redness in the tissues about the incision.

18*th.* Pulse 110; doing well; radial pulse detected but very feeble; the œdema has entirely left the hand; says he "feels the blood coursing to the fingers." Evening: Pulse 106; no swelling about the neck; the tumour is subsiding.

19*th.* Pulse 108; sleeps well at night; some mucus expectorated; ordered an enema. Evening: Bowels freely acted and gave great relief; half a grain of morphia at bedtime.

20*th.* Pulse 100; general condition excellent; considerable hoarseness and cough; œdema disappeared from the arm.

21*st.* Doing well; the morphia quieted the cough and produced sleep; tongue clean; pulse 100; discharge healthy.

22*d.* Pulse 96; one of the ligatures which secured the small artery divided during the early part of the operation, came away this morning.

24*th.* Pulse 96; the other superficial ligature was removed this morning; good union in the wound and no swelling about the neck; the tumour has diminished very much in size, is quite soft, and looks as if it would suppurate.

25*th.* Pulse 92; the cough which has troubled him for several days has assumed a paroxysmal character, coming on at long intervals and with no expectoration; percussion and auscultation reveal no disease in the chest. The ribs below the clavicle can now be felt, and the head of the humerus can also be traced on its anterior face; after removing some dried blood and matted hair from the axilla, an ulcerated condition of the skin was found about an inch in length and half an inch in width, through which could be seen a mass of clotted blood; from this point on the day of operation a few drops of blood had exuded, showing the necessity for early operative interference.

26th. Rapid diminution of the tumour; has free perspiration; pulse 86; ordered six grains of quinia daily; no collection of pus in the wound; spasmodic cough continues, probably due to irritation of the phrenic nerve caused by the proximity of the ligature.

Dec. 2. 9.30 A. M. Ligature came away this morning—18 full days; cough, which has been decreasing for the last few days, has now almost vanished; complains of pain down the arm as far as the elbow; taken no stimulants since the operation; the tumour presents signs of suppurating; small clots are being discharged through the opening in the axilla, which has been enlarging.

5th. Pulse 84; passed best night since the operation; the axillary tumour is subsiding, and discharging about a tablespoonful of softened blood daily.

7th. The axillary wound discharging more, and large clots are removed in each dressing; able to sit up in bed; arm supported on pillows; one bottle of porter daily ordered.

12th. 29th day. Hardly any discharge from the wound of operation; free discharge from the axilla, and pus observed with the softened clots; general condition good; pulse 84.

14th. The suppuration in the tumour has been increasing for the past two days, and the axilla has an inflamed appearance; the patient seems restless and the pulse is more quick to-day; wound of operation entirely closed up and parts firm; some exhaustion; ordered an ounce of whiskey three times a day; appetite is not so good as heretofore.

15th. This morning the entire contents of the tumour, consisting of fetid broken-down clots and pus, amounting to nearly a quart, came away on removing the dressings; some of the clots were as large as a hen's egg; the tumour entirely subsided, but not one drop of arterial blood came away; the odour arising from the discharge and the drain has materially affected the patient, and the stimulants were consequently increased; two bottles of porter daily and half an ounce of brandy every three hours, with beef-tea and eggs.

16th. Copious discharge from wound; general condition more favourable; more clots came away in the dressings; pulse soft and good; wound washed with a solution of permanganate of potash.

18th. Discharge assuming a more purulent character and less in amount during the past few days; skin of the arm when friction is applied assumes a natural healthy hue; the axilla when cleansed revealed deadened nerves and vessels and portion of the original sac of the aneurism, contracted and hard to the touch, lying high up in the cavity.

26th. On making slight traction upon a protruding portion of sloughing nerve, it readily came away, and with it a bundle of small nerves about two inches in length; the main portion of nerve measured six inches, and was excessively offensive; good healthy granulations were observed in all parts of the axillary space and the discharge entirely purulent.

27th. 4.45 A. M. Francis was awakened by a feeling of heat on his left side, and sliding his hand along the chest, discovered blood; Dr.

Williams, the resident surgeon, was immediately summoned, and found that a fearful hemorrhage had occurred through the axillary wound, probably exceeding two quarts; the axillary space was filled with clots, while the blood had coursed along the mattress and soaking through it had reached the floor, making a large pool; on moving the arm, seeking the origin of the hemorrhage, a fierce gush of blood followed; Dr. Williams controlled the bleeding by forcing into the cavity a plug of lint soaked in the persulphate of iron, and then applied the horse-shoe tourniquet, making firm pressure, which forced the plug firmly within the axillary cavity. Excessive prostration followed this with two attacks of syncope, from which the patient rallied after vigorous stimulation; the pulse was for several hours very weak, the skin blanched and covered with moisture; the left arm very white and quite cold. Evening: Circulation in left arm partly re-established and some warmth in the fingers; no hemorrhage since morning, the pressure of the tourniquet not having been taken off; has been able to take all the nourishment and stimulants, the stomach remaining perfectly sound; is comfortable, and disposed to sleep.

28th. Being unable to go to the hospital on account of severe indisposition, Dr. Williams writes: "McKoen passed a comfortable night and is in good condition this A. M., at present asleep (7 A. M.), so cannot particularize as to pulse, &c."

Evening: Dr. Herbert writes: "I have just seen the man, and I think he is doing very well; quite a good pulse, no hemorrhage, and is very comfortable."

29th. Continues same, but very weak; has taken every hour small doses of acetate of lead and opium; alternate hours stimulants with strong beef soup and milk; no hemorrhage.

11 P. M. Had a slight hemorrhage amounting to two ounces controlled by re-adjustment of the tourniquet, which had worked somewhat out of position.

30th. 7 A. M. Hemorrhage amounting to an ounce escaping by the side of the tourniquet; had a violent chill; 9.30, hemorrhage; profuse perspiration; quick pulse; tongue moist; tissues about the shoulder much swollen from the pressure and the collection of blood under the skin; bleeding controlled by the compressor, which when loosened in the least permits the blood to gush forth.

12.30. A consultation was called in regard to the practicability of securing the bleeding vessel or amputation at the shoulder-joint, as it was evident from the drain the limb would perish; during the consultation the patient was seized with a violent chill, which necessitated an abandonment of all operative interference. Evening: Considerable collection of air in the tissues about the shoulder. To relieve this I passed into the part an exploring needle, and let escape some very fetid gas; following this, arterial blood jetted forth, and pressure was required to arrest it; the space vacated by the air was soon filled up by blood; this increased the pressure upon the shoulder and gave intense pain, which was only relieved by morphia.

31st. 48th day. Another violent chill; entire surface becoming purple, followed by hemorrhage; pulse very feeble; tongue exceedingly dry; shoulder greatly swollen; firm pressure required to control the hemorrhage; has peculiar sickish sweet smell indicative of pyæmic involvement; very sallow; surface clammy; the continued drain of blood has so much impaired the vitality of the left arm that signs of local sphacelation are beginning to appear; the hand is very cold and has a leaden appearance.

1867. *Jan.* 1. Another hemorrhage; the original plug being still in the axilla, but on the slightest movement of it the blood gushes out so furiously that in the patient's weak state it is entirely out of the question to attempt to remove it to seek for the origin of the flow; continued stimulants and morphia.

2d. Another hemorrhage, but stopped by placing an additional plug soaked in sol. persulph. iron; patient almost exhausted; tongue perfectly dry; can hardly articulate; evidently sinking, but able to take his nourishment.

5th. Had another hemorrhage, but slight; during the last three days he has continued gradually to fail, and for the last forty-eight hours death has, in fact, seemed inevitable; sphacelation of arm and forearm complete; the only redeemable feature is that he can swallow and retain food; pulse 140; there seems to be a line of demarcation forming at the shoulder; no odour from the arm, which seems drying up; if any change has taken place, it is for the better; has been using glycerine on the tongue, and it is a little less dry; and some signs of pus seen around the compress in the axilla; the pressure of the pad of the tourniquet on the top of the shoulder has caused a deep slough at that point; bowels opened by an injection; slackened up the tourniquet, but did not disturb the original pad. Evening: On withdrawing the fetid cloths exterior to the pad to make the parts a little more clean, hemorrhage again ensued. I now determined, although it was night, to examine the axilla and ligate if possible the bleeding vessel; accordingly, I removed the pad which had originally been inserted, and a fearful hemorrhage followed, but, forcing my fingers deeply in the wound, this was arrested; with the greatest difficulty, after an hour of the hardest work I ever performed, two fingers being constantly applied to the source of bleeding, the least relaxation being followed by a gush of blood, I finally succeeded in passing two ligatures deeply under the gangrenous tissues, the one above and the other below the bleeding vessel, which seemed to be the subscapular, supplied through the collateral circulation; on tightening these all hemorrhage ceased; considerable pain followed, and was probably due to the ligature including some portion of nerve; but this it was impossible to avoid. I was only too thankful to see the ligatures in place; the patient was almost dead from this protracted and painful procedure, but very hopeful and re-assured by the cessation of the bleeding, was willing to undergo anything for life; a chill threatened to come on which was warded off by a free use of brandy and hot drinks. While working in the sloughy cavity I found pus exuding in all directions, but especially from the region of the shoulder-joint, and from the great pain in that locality I felt convinced that the slough or the pressure of the tumour had involved the joint.

6th. Pulse quick; tongue dry; removed the charpie from the axilla, and there was no trace of hemorrhage; takes stimulants and nourishment well; the line separating the dead and living part more complete.

7th. Pulse weaker and more rapid; tongue dry, and copious perspiration; poultice applied over the shoulder.

9th. Pulse quick and very weak; tongue dry and features pinched; voice feeble and hoarse; never refuses nourishment; keeps up wonderfully.

10th. More comfortable to-day; two movements of the bowels during the night; good pus in the axilla, and the cavity seems contracting;

believing that he could take an increased amount of nourishment, I ordered one raw egg every second hour, day and night, with half an ounce of brandy.

11*th.* Has taken one dozen eggs since yesterday, and relishes them; there is an increased vitality in the tissues in the vicinity of the gangrenous arm.

12*th.* Sixtieth day and patient more comfortable; tongue more disposed to be moist; one pint of champagne ordered additional.

16*th.* Better; the line of demarcation is deep and fully formed; there is very little odour; the arm drying up, the fingers shrivelled; decided that no attempts should be made to remove the part until the patient seems to suffer from its presence; has still a rapid pulse and hurried respiration; tongue soon becomes dry when sleeping, although it has lost its extreme dry and cracked condition; it is now twenty days since the first hemorrhage, and twelve since the last, and forty-six since the separation of the subclavian ligature.

18*th.* Has had some cough for the past few days; but general condition so good that I concluded to remove the dead member; cutting through the dried tissues following the line of separation, the limb was soon taken off, the bone was sawed through a little above its middle; the remaining portion of the humerus appeared entirely devoid of vitality, and will require removal at some future time.

20*th.* Pulse and skin better; gaining strength rapidly; has taken one hundred and twenty eggs during the past ten days, and they have been of great service; ordered them less frequently.

21*st.* This morning the attendant observed Francis' face become very pale, and on examination another hemorrhage was found to have taken place. Dr. Williams found him exceedingly weak; scarcely any pulse; the armpit was again plugged with charpie and Monsel's salt, and the tourniquet readjusted. 11 A. M. I found him excessively prostrated and hardly expected him to revive; he came up well under increased stimulants; on removing the plug from the axilla I found blood oozing from some small vessels about the neck of the humerus, which proved to be the circumflex humeri, which have sloughed; continued the iron and pressure.

26*th.* Doing well; granulations pale; Monsel's salt applied to site of the last hemorrhage.

28*th.* Considerable pain on the top of the shoulder; while pressure upon the part forces pus into the axilla in considerable amount.

Feb. 1. Tissues about wound contracting very well; granulations red, and pus healthy; is sitting up each day when the wound is dressed; no hemorrhage.

5*th.* At 12 o'clock noon Francis had a violent chill, which was followed by fever and sweating, and appears due to the irritation consequent upon the collection of matter in the shoulder-joint, and which has been collecting more of late, and which will soon demand an opening; takes gr. xvj quinia daily.

11*th.* Had a very bad night, and suffered greatly from the shoulder, which is exceedingly painful. 4 P. M. Assisted by Dr. Hunt, the patient having been etherized, I grasped the denuded portion of humerus, and, in rotating the bone, the shaft came away, leaving the head in the socket; an incision about three inches in length was made from the most prominent portion of the head of the bone to the axillary wound; its removal was quickly accomplished; the bone was surrounded by pus and some granulations observed about the cavity; the attachments of the muscles about the neck of the bone had disappeared from ulceration, and it was so loose that hardly any cutting was necessary. There was free oozing, but no arterial jets; about ten ligatures were applied and the cavity for safety filled with charpie, moistened with the solution of Monsel's salt. The bone removed was very offensive, and had evidently undergone absorption from the original pressure of the tumour, as well as from the action of the pus, being furrowed out and much absorbed in places; no unpleasant effects followed the administration of the ether.

14th. Doing well; lint soaked in lime-water placed in the cavity, which is granulating up nicely; sixteen grains of quinia taken daily with porter and English ale.

15th. Doing well; gaining each day, and far better since the operation of the eleventh.

19th. Ligatures all away; glenoid cavity filling up rapidly; general condition excellent; the tissues from the upper and outer portion of the arm are approximating and covering up the axillary opening.

21st. Discontinue the quinia and substitute the elixir cinchonæ.

28th. Allowed to be about; shoulder contracting. One hundred and seventh day since first operation; gaining strength daily; discharge much diminished, and perfectly healthy.

March 4. Has been up and walking about for several days past; wound dressed once a day; one or two strips of plaster keeps the large flap in its place, and union has almost entirely taken place.

9th. Discharged; wound almost well; one hundred and fifteen days since the subclavian ligation.

Remarks.—In the above case it will be seen that the disease came on insidiously, and probably existed for several months prior to its detection, the patient, however, continued to perform his arduous duties, and only discovered the tumour by accident; no serious trouble arose until after its rapid enlargement, when intense pain, loss of voluntary motion and sensation became prominent symptoms. The aneurismal sac had evidently much enlarged, softened, and then burst, when the blood became diffused into the adjacent loose tissues, which permitted the tumour to enlarge with rapidity.

The ligature was placed on the artery of the left side and between the scaleni, and came away on the eighteenth day with no difficulty following; the tumour sloughed, and on the forty-third day the first hemorrhage occurred during sleep, which amounted to more than two quarts, and almost proved fatal; the day previous at least six inches of one of the large nerves of the axillary plexus came away, which showed that a considerable portion of the axilla was sloughy and considerably undermined. Considering the extreme prostration which followed the hemorrhage, it was not practicable to withdraw the compress from the axilla to seek for the vessel which had bled until reaction was fully established.

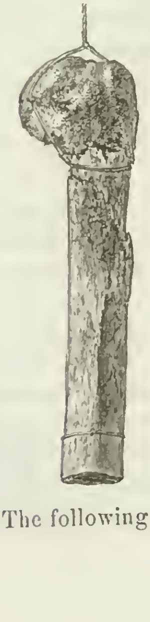
Within forty-eight hours a violent chill came on obliging a delay, and an indefinite postponement of all operative measures; hemorrhage after hemorrhage followed in spite of the axillary pad and compressor, the least relaxation of which allowed arterial blood to escape. From the 27th of December to the 5th of January, ten hemorrhages occurred; the last, which was of considerable amount, left the patient in a fearfully exhausted state. The bleeding vessel, evidently the subscapular, was secured; although pyæmic symptoms were very marked, yet under vigorous stimulation and increased nourishment, the patient rallied, and soon was doing well; there was no further trouble until the circumflex humeri arteries sloughed, when a violent hemorrhage brought the patient to death's door; again he rallied and was soon in as good a condition as before.

The first few hemorrhages so drained the patient of blood, that the arm, all along but feebly supplied by the collateral circulation, lost its vitality, a violent chill being the premonitory symptom, while the pressure on the top of the shoulder, which was kept up during many days, obstructing the collateral circulation through the transversalis colli and supra-scapular vessels, hastened the death of the limb.

During the entire process of sphacelation there was very little odour arising from the part, the arm shrivelled up, and had a mummified appearance, the line of demarcation formed along the inner edge of the deltoid muscle and running up its outer edge for about two inches, and then backwards to the wound of the axilla.

When the patient began to suffer from irritation consequent upon nature's endeavours to remove the part, the sphacelated limb was removed, care being taken not to touch any of the living tissues, while the bone was divided considerably below the line of separation.

Fig. 2.



After the ligation of the subscapular I examined the sloughing axillary cavity, and found the aneurismal sac lying close to the clavicle; it was contracted, very dense, about three inches in length and one in breadth, and had withstood ulceration; no evidences of sac existed in any other portion of the cavity.

Abscess about the head of the humerus appearing, the remaining portion of bone was removed, Fig. 2, which was much softened; all the attachments of muscles and ligaments had given way, and little cutting was required. Convalescence was now very rapid and almost magical, for within four weeks the patient was dismissed the hospital comparatively well.

The following table exhibits the pulse and temperature of the right and left side before and after ligation, and was prepared by Dr. Williams, the resident physician.

Date.	Pulse.	Right Axilla.	Left Axilla.	Right Hand.	Left Hand.
Nov. 8, evening,	108	100¾	100¾	101	96½
" 9, "	112	100½	100¼	100¾	96½.
" 10, "	110	100	100	99¾	98¾
" 11, "	112	99½	100	99¾	97½
" 12, "	116	100	99¼	98½	97
" 13, "	116	99½	99½	99	96½
" 14, 3 P. M.,	124	99	96½	98¾	95¼
" " 7 "	132	102½	100½	102	102
" 15, A. M.,	124	101	102½	100½	102

An interesting feature in the above table is the rapid rise in the temperature in the limb after the ligation. The power of endurance and the tenacity of life, as shown in this remarkable case, were greater than in any instance which has ever come under my notice; to the continued ability of the patient, even in periods of excessive exhaustion, to take and retain any amount of nourishment and stimulants may be in a great measure ascribed the successful issue. During a period of ten days of greatest prostration more than one hundred and twenty raw eggs were taken, with each half an ounce of brandy, besides each day the usual allowance of three quarts of milk and other nourishment in proportion.

The loss of the limb was deplored at the time, but had the patient recovered with the arm it would have been of no use, since many of the nerves had sloughed away, while others were so much injured by pressure and inflammation of the adjacent parts, that it would have been a useless appendage. Should a similar case again present, I would be inclined, after the ligation of the subclavian, to make a free incision, evacuate the

Fig. 3.

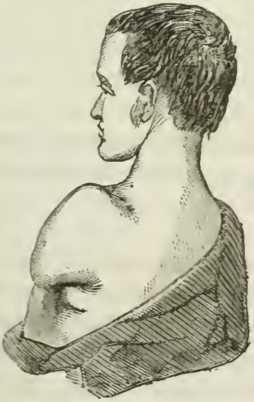
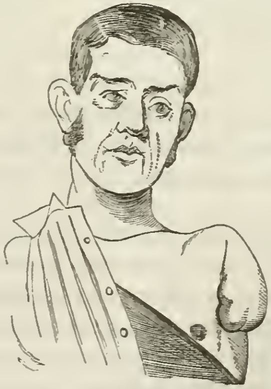


Fig. 4.



tumour, tie the axillary above and below the aneurism, if practicable, and hasten to bring about a healthy condition of the cavity occupied by the effused blood; and should the pressure of the aneurism have induced caries of the joint, and permanent injury to the axillary nerves, amputation at the articulation would then be required.

The accompanying figures from photographs (Figs. 3 and 4) give an accurate idea of the appearance of the stump when the patient was discharged from the hospital. Much more tissue covers the shoulder than was required, and gives the impression that the head of the bone is still in place, but it must be remembered that this was nature's flap, the irregularity of the line of union in front being the original tortuous line of demarcation.

Table of Subclavian Ligations which have occurred at Philadelphia.

No.	Operator.	Date.	Place of ligation.	Disease or injury.	Result.
	CIVIL HOSPITALS.				
1	Gibson,	1828.	3d portion.	Rupture of axillary.	Died.
2	Drayton,	1859.	“ “	Rupture of axillary.	Died.
3	Morton,	1866.	2d “	Spontaneous aneurism.	Recovered.
	MILITARY HOSPITALS				
1	Gross,		3d portion.	Gunshot wounds.	Died.
2	Coolidge,		“ “	“	“
3	Hopkinson,		“ “	“	“
4	Kennedy,		“ “	“	“
5	Morton,		“ “	“	“
6	Levis,		“ “	“	Recovered.
7	Wells,		“ “	“	Died.
8	Not stated,		“ “	“	“

ART. VII.—*On Astigmatism, considered in its Relations to Defective Vision, Asthenopia, and Progressive Myopia.* By JOHN GREEN, M.D., of St. Louis, Mo.

IN a former paper (*Am. Journ. Med. Sciences*, January, 1867) I have briefly alluded to the very important disturbing influence of the accommodative act in astigmatism, as shown not only in complicating and masking the visual phenomena, but also in the production of asthenopia, and sometimes even of progressive myopia. I propose, now, to examine the subject somewhat more in detail, with especial reference to the correction of visual defects, and the prevention or treatment of other complications, beginning with the study of

Simple Positive Astigmatism (Am).—In this malformation, which may be considered as a partial myopia, the accommodative faculty is called into action in near vision only. In viewing distant objects, the eye instinctively abstains from accommodative efforts, which serve only to impair the distinctness of visual perception. A partial closure of the eyelids, however, by effectively converting the aperture of the pupil into a narrow slit, may materially assist in the recognition of distant objects, although at the expense of considerable loss of light. In near vision, any want of distinctness in the retinal image is in part compensated by bringing the object nearer, aided by the natural contraction of the pupil, and perhaps also, as in distant vision, by the partial closure of the lids. If moderate in degree ($\frac{1}{40}$ or less), and occurring in an eye otherwise healthy, this form of astigmatism is rarely attended with much inconvenience, and therefore most frequently escapes detection, or, if detected, demands only such occasional aid as is afforded in distant vision by a concave cylindrical eye-glass. In near vision also, so long as the accommodative power remains good, no especial inconvenience is felt; for any slight indistinctness in the definition of small objects, if not wholly overcome in the manner just mentioned, is still farther diminished and pretty effectually concealed by rapid and unconscious changes of accommodative tension, bringing the different features of the object succcessively under inspection. Asthenopia, if it occur at all, will only manifest itself in near vision in consequence of these unsteady and oscillatory accommodative efforts, and will generally be insignificant in degree. If the astigmatism exists in a higher degree ($\frac{1}{20}$ to $\frac{1}{10}$), serious asthenopia may be caused by the abnormal strain on the accommodation, especially as there is a strong temptation to hold the book or work even nearer to the eye than in myopia of the same grade. The strong accommodative exertion thus induced, together with the attendant increased efforts at convergence, may lead to muscular asthenopia, or may even prove a powerful exciting cause of myopia. The obvious remedy for these dangers and disabilities consists in the correction of the astigmatism by appropriate concave-cylindrical glasses, bearing always in mind that the higher the grade of the astigmatism the more accurately must the axis of each glass be adapted to the direction of the ocular meridian of least curvature. Such glasses suffice equally for distant and for near vision, so long as the range of accommodation continues tolerably good—that is, until the development, with advancing years, of actual presbyopia.

Attention has lately been called by Donders to the fact that presbyopia consists not only in the progressive limitation of the range of accommodation, but also in a sluggish, and, as it were, reluctant performance of such accommodative adjustment as is still possible. The adjustment, too, when once effected, continues for a little time after the voluntary effort and the convergence of the visual axes have ceased, and it is only after the lapse of some moments that the eye regains its former adjustment for distant vision. When, therefore, this condition of the accommodative faculty, which precedes by several years the ordinary recognition of presbyopia, has once developed itself, rapid changes of accommodative adjustment from one to the other of the two astigmatic foci become impossible. The consequence is that the eye no longer attempts to vary its adjustment for different features of near objects, but rests content with less perfect, but, at the same time, less fatiguing vision than at an earlier period of life. The eyes seem, therefore, to have become physically stronger, although optically less perfect; in other words, any asthenopia which may have previously existed, gives place to more or less defective vision at all distances. Convex glasses are perhaps now adopted with the advantage of magnifying near objects, but still without securing perfect definition. All objects, in fact, whether near or distant, both when viewed with the naked eye and with convex glasses, appear shaded, doubled, or indistinctly defined in the direction of one or the other of the principal meridians of ocular refraction. This may give rise to little or great inconvenience in reading common print, according as the principal meridians correspond more or less nearly to the horizontal and vertical direction, and so admit of the accurate adjustment of the eye for the vertical limbs of the letters, upon which their easy recognition chiefly depends. The whole visual defect is then thrown into the form of a shading or reduplication of the words in the blank space below the lines; and but little inconvenience is felt, provided only that the lines are sufficiently separated or "leaded"—(a similar shading or reduplication above the lines is, to a great extent, prevented by the natural drooping of the upper eyelid). Great difficulty may be experienced, however, in reading "solid" matter, in which the lines are crowded closely together, and any spherical glass which increases the distinctness of the lines is found to be worse than useless by impairing the distinctness of the letters. In this condition of the eye, very great benefit may often be derived from the employment of cylindrical glasses; and it will frequently be found that concave cylindrical glasses are sufficient even for reading, for it must be remembered that the visual defect has not yet reached the point of absolute presbyopic limitation of the range of accommodation, but consists rather in the loss of power of rapid adjustment.

With the further progress of presbyopia a new phenomenon is observed, viz., the change, in viewing near objects, of the meridian of most distinct vision, dependent on the recession of the farther of the two near points beyond a convenient reading distance. So long as the accommodative power of the eye remains tolerably good, the eye makes strong efforts to adjust itself in near vision for the same meridian as in distant vision. This, in the case now under consideration, is always the meridian of least ocular refraction, and it is only after this adjustment has become impossible, owing to increasing presbyopic limitation of the range of accommodation, that the eye falls back upon the easier adjustment for the meridian of greatest curvature. This inversion of the meridians of clearest near and distant vision, as shown by the inspection of proper test-diagrams, is very striking and characteristic. Its effect, too, in impairing the usefulness of the eye in reading may be very great, if, as is oftenest the case, the change is from the adjustment for vertical to that for horizontal lines. Under these circumstances there may be such confusion in the letters as to render them quite illegible, although the lines may still appear perfectly distinct. This form of astigmatic presbyopia may come on quite suddenly, especially if from temporary disuse of the eyes—as in sickness—the accommodative power has become enfeebled, and the initial degree of this presbyopia will generally be equal to the whole degree of the astigmatism. Such a case of presbyopia, although perhaps quite sudden in its access, may, however, continue for a long time without sensible increase, for the eye has now a new store of accommodative power in reserve equal in amount to the full degree of the astigmatism. The treatment of this form of presbyopia should be begun by the use of convex cylindrical glasses carefully adjusted to correct the whole degree of the astigmatism; if concave cylindrical glasses have been previously worn, they may be changed for the corresponding convex glasses with the direction of the axes reversed. Should, however, the degree of the astigmatism be very high, the transition from concave to convex cylindrical glasses, or the adoption of the latter in the early treatment of the presbyopia, may involve the production of an unnecessary and inconvenient degree of artificial myopia. In such a case a special glass may be ordered, in which this tendency is overcome either by the combination of a convex and a concave cylindrical surface with their axes turned to a right angle to each other, or, as is more generally advised, by combining a convex cylindrical surface adjusted to correct the astigmatism with a concave spherical surface adapted to correct the excessive artificial myopia. Whenever in the progress of the presbyopia it comes to exceed the degree of the astigmatism, the simple cylindrical glass ceases to afford the requisite correction; it then becomes necessary to reinforce it by the addition of a convex spherical surface of suitable focus. The same result may be attained also by combining two convex cylindrical surfaces, of different radii, with crossed axes.

Simple positive astigmatism is very frequently mistaken for ordinary myopia, and treated by common concave glasses. This is, I believe, a frequent and important source of danger to the eye. A person labouring under this form of astigmatism discovers that his general perception of distant objects is inferior to that of his friends, and is led to make trial of concave spectacles. The effect of these glasses, if not too strong, is to change the region of accommodation so that the eye when at rest is now adjusted in distant vision for the meridian in which it was before myopic, while by a certain accommodative effort the adjustment can be readily changed to the other meridian. The total perceptive power of the eye may thus be very sensibly increased, but at the cost of incessantly varying accommodative efforts. The result is, frequently, such a degree of asthenopia as to lead to the speedy rejection of the glasses; but, unfortunately, this admonition is not always heeded, and so more serious complications may arise. One of the first results of the adoption of concave spectacles in this form of astigmatism is the neglect of the habit of complete accommodative relaxation in distant vision, as is shown by the eye soon relapsing into the habit of accommodating for its meridian of least refraction, so that the glasses seem to have lost their original efficacy; meanwhile it is discovered that without the glasses distant vision has become less distinct than it was before their adoption, and that their use has given rise to an apparent myopia. Thus far no great harm has been done; and if the glasses are now abandoned, the eye gradually returns to its original condition. It too often happens, however, that the apparent myopia thus induced is interpreted as an indication for stronger glasses; these, in turn, are soon outgrown, and are exchanged for still stronger, until actual and perhaps rapidly progressive myopia is developed. This tendency to the production of myopia is increased by the fact that the apparent size of objects is diminished by the concave glasses, and so the necessity for holding the book near the eye in reading becomes greater than before. This, in turn, calls for increased efforts of accommodation to overcome the effect of the concave glasses, and of convergence to reinforce the overtaxed accommodation.

When, with advancing years, the disability of presbyopia has been superadded to that of astigmatism, it is often possible, by a few trials with common convex spectacles, to find a pair which suffices tolerably for reading, by so correcting one eye or both as to throw the whole visual defect into the form of a shading or reduplication of the words in the spaces between the lines. This amounts, in fact, to the restoration of about the same reading power as the person has been accustomed to, and is therefore generally accepted as a satisfactory result. With such imperfect correction, however, the resultant acuteness of vision may still be far below the normal standard; this may lead to the habit of using very strong glasses, in order to increase the apparent diameter of small objects by bringing them very near to the eye. This calls, of course, for excessive convergence of the visual axes, and may lead either to muscular asthenopia or to the abandonment of the habit of binocular vision. The obvious remedy for these disadvantages is in the adoption of convex cylindrical or spherico-cylindrical glasses.

In the foregoing remarks but little notice has been taken of variations in the direction of the meridians of greatest and least refraction. It may be readily conceived, however, that the direction of these meridians, with reference to the dominant lines of surrounding objects, must very greatly affect the usefulness of the eyes for particular kinds of work. How this is shown in reading has been already noticed. In the common walks of life, also, both within doors and out of doors, the great majority of the regular objects of which the eye takes especial cognizance are defined by vertical and horizontal lines. Such are the architectural and structural lines of buildings, the lines of the letters upon sign-boards and placards, the line of the distant horizon, the trunks of trees, &c. If now, in a case of positive astigmatism, the principal meridians of the eye correspond pretty nearly in direction to the horizontal and vertical, lines lying in one or the other of these planes will appear clearly defined, while those lying in all other planes, and especially in the opposite plane, will be more or less indistinct. Such a correspondence of the principal meridians of the eye with the dominant lines of surrounding objects is, however, by no means constant; in fact, it may be considered the exception rather than the rule. In investigating any considerable number of cases with reference to the direction of the principal meridians in the two eyes, it will be found that they fall naturally into two distinct classes, viz., the symmetrical and the unsymmetrical. Of the symmetrical cases many will be found in which the corresponding meridians vary but little from the vertical, in which case the two retinal images will be nearly identical, and the two eyes will work well together and give substantially the same visual result as either eye singly. If, on the contrary, the combined deviation in the two eyes is equal to ninety degrees, both vertical and horizontal lines will appear indistinct; but oblique lines lying in the two planes midway between the vertical and horizontal will be pretty clearly defined, and by covering first one eye and then the other, it will be evident that this is the result of the combined impression, upon the sensorium, of two dissimilar retinal images. So, too, if with the direction of the principal meridians absolutely identical in the two eyes, there happens to be also a refractive difference equal or about equal in degree to the astigmatism, it will be found that with any given degree of accommodative effort the two eyes will be adjusted at equal distances for the two opposite meridians, which will be oftenest the vertical and horizontal, and so the astigmatism may wholly escape detection by the ordinary tests of horizontal and vertical lines. Of the unsymmetrical cases a certain number present a nearly equal deviation in the same direction, and so admit of identical images in the two eyes, but with the plane of most distinct vision inclined to the vertical. This may lead to a habit of bending the neck to one side or the other in looking at vertical or horizontal lines, or of giving to the book or paper an oblique position in reading or writing. With unequal deviation in the two eyes there will be two planes of most distinct vision intersecting each other at an angle equal to the sum or to the difference of inclination.

When the retinal images in the two eyes are materially different, the visual phenomena may be variously modified. Objects with strongly dominant lines, corresponding in direction to the two meridians of most distinct perception, have often a peculiar glittering appearance, owing to the mind taking especial cognizance first of one retinal image and then of the other in rapid alternation. Other objects, with outlines less conspicuously marked, may present no details of sufficient prominence to fix the attention, and so appear generally indistinct. When one eye is astigmatic while the other is of normal visual acuteness, the distorted astigmatic image becomes a source of confusion; it may, therefore, come to be wholly neglected in ordinary vision, or, if the astigmatism is of a low grade, it may prove to be only an occasional inconvenience, and is then, perhaps, temporarily excluded by the closure of the eye.

Positive Astigmatism with Myopia (M+Am).—The coëxistence of astigmatism with myopia is much more frequent than has been generally supposed; in fact, in cases of decided myopia the absence of astigmatism appears to be the exception rather than the rule. The astigmatism, even when considerable in degree, is in unaided vision so masked as generally to escape detection, while the improved perception of distant objects with concave glasses often leads to the hasty conclusion that there can be no remaining defect worth investigating. Concave glasses when used are almost always chosen of excessive strength, so as to convert the case into one of negative astigmatism (Ah) or even of negative astigmatism with hypermetropia (H+Ah). This artificial change in the region of accommodation enables the eye to adapt itself to the reception of parallel rays lying in the plane of either of its principal meridians, and so the characteristic phenomena of astigmatic vision are hidden in a mass of seemingly contradictory observations. The improved visual power at a distance acts as a perpetual incentive to accommodative efforts, which are attended at first with more or less of asthenopia, but which, later in life, are performed sluggishly and with difficulty; this gives rise to a comparative slowness of perception, which, in time, gradually increases, until, with advancing years, accommodative adjustments are finally abandoned, and the eye finds rest in amblyopic vision.

In near vision, and especially in reading, the astigmatic eye is compelled to distinguish objects whose size has generally been fixed with reference to the powers of normal eyes. It follows, therefore, that, in astigmatism as in hypermetropia, the eye attempts to make up for the indistinctness of small objects by bringing them nearer the eye and thus enlarging their retinal images. This calls for increased efforts at accommodation and convergence, with their attendant disabilities and dangers. These are: 1st. Muscular asthenopia and insufficiency of the internal recti muscles as the result of the excessive convergence; 2dly. Ordinary asthenopia from the strong accommodative efforts provoked by the attempt to read at too short distances; 3dly. The form of asthenopia which occurs also in distant vision with concave glasses, and which here depends upon continually changing accommodative efforts called forth by the necessity for more distinct perception of a doubtful letter or figure; and 4thly, as the direct consequence of the excessive and long continued strain, myopia from posterior distension of the eyeball. When myopia is superadded to astigmatism the temptation to hold the book very near the eye is much stronger than in simple astigmatism, while the dangers which attend the habit remain undiminished and thus the myopia may become progressive.

The progressive tendency of the myopia, although it often goes on to a most alarming extent, is yet restrained by some opposing agencies. Thus the muscular asthenopia may compel the sufferer to desist from pursuits for which his eyes are unsuited; or this may give place to insufficiency of the internal recti muscles which may terminate in intermittent or permanent external strabismus, and so the efforts at convergence having become unavailing, cease to be made. Or the increasing myopia may finally lead to the use of concave glasses so strong that the astigmatism may be accidentally corrected in one eye or both by giving a peculiar twist to the spectacle frame or by looking obliquely through the glasses. The asthenopia which is felt in viewing distant objects through strong concave glasses gradually gives way, too, with advancing years, owing to the more sluggish manner in which the accommodative act is performed by the harder crystalline, rendering it impossible successively to accommodate for the different meridians without too great expenditure of time.

The treatment of positive astigmatism combined with myopia must be first and chiefly by concave cylindrical glasses, which must be carefully adapted to correct the exact degree of astigmatism in both eyes. If the degree of myopia remaining is still such as to make it necessary in reading to hold the book too near the face, a concave spherical surface must be added; but it is not well to be hasty in deciding upon the necessity for this additional aid, for it often happens that, from previous abuse of concave glasses, the eye has in part lost the habit of accommodative relaxation, and requires time for its recovery. For distant vision it is necessary to measure and correct the total refractive anomaly, bearing always in mind that, from the cause just mentioned, the degree of the myopia may appear to be greater than it really is. If simple cylindrical glasses suffice for reading and for near vision, it may be well to prescribe for distant sight an ordinary concave eye-glass to be used in connection with the cylindrical spectacles. Above all must we beware of the dangers which attend the use of common concave glasses. The mischief they may do in rendering distant vision fatiguing and painful has been already noticed, while in reading they can obviously be of no use, for the habit of holding the book near to the eyes depends, not upon extreme myopic change in the position of the far point of distinct vision, but upon the effort to compensate for the indistinctness of the retinal images by increasing their size.

The important practical lesson to be drawn from these considerations is that *myopia is a complex and important disease* whose successful treatment demands an accurate knowledge of the physiology of vision as well as the exercise of much patience and the employment of improved methods of examination

The treatment of myopia with astigmatism in the later years of life, after the development of full presbyopic limitation of the range of accommodation, must depend entirely upon the position of the far and near points of distinct vision. For distant vision substantially the same glasses will be needed as at an earlier period, while for reading, choice must be made between concave and convex cylindrical glasses, either simple or combined with convex or concave spherical surfaces. In general, such glasses should be selected for reading as completely correct the astigmatism, and, at the same time, leave the near point as close to the eye as is consistent with easy convergence of the visual axes.

Simple Negative Astigmatism (Ah).—In this form of astigmatism it is within the power of the eye, by changes of adjustment, to bring to a focus parallel rays, lying in the plane of either of its principal meridians. Hence it is seldom the case that in distant vision any great difference is perceived in the distinctness of lines situated in different planes, for the eye forms the habit of unconsciously varying its adjustment to suit the direction of the particular lines to which its attention is directed. Tested by Snellen's types, the acuteness of vision may seem to be nearly or quite normal, but it will always be found that in looking at objects of more complex design, the finer details appear confused. So also in near vision, it will be found that large and well-printed letters are clearly recognized, but that the smaller types, especially in badly printed books, can only be distinguished by bringing them rather near to the eye. Hence may arise, in distant vision, asthenopia from the necessity for constantly varying accommodative adjustments, and, in near vision, muscular asthenopia with perhaps insufficiency of the internal recti muscles or even divergent strabismus, all dependent on the excessive efforts at convergence of the visual axes. Myopia is not generally to be feared, for the very fact of the eye remaining hypermetropic, or negatively astigmatic, in the presence of powerful exciting causes, is evidence of the absence of predisposition to that disease. The disabilities which attend negative astigmatism are therefore of the nature of asthenopia, with more or less defective vision. As accommodative adjustments become sluggish with advancing years, the asthenopia in distant vision gives place to less perfect visual perception. Presbyopia, too, is developed by as much earlier than usual, as the refractive power of the eye is originally weaker in its meridian of least curvature. The comparative difficulty of distinguishing small type leads to the early adoption of convex glasses, and generally to the selection of a strong pair, in order to secure the advantage of large retinal images, by allowing the book to be held near to the eye.

The habit of holding the book near the eyes in reading sometimes leads to an erroneous diagnosis of myopia, and the adoption of concave glasses. These, of course, are of no real advantage, yet it is sometimes the case that they are worn under the impression that they are the proper thing, and that somehow they must be of service.

The treatment of negative astigmatism is by convex cylindrical glasses. These serve equally for distant and near vision so long as the eye retains a sufficient accommodative range. With the development of presbyopia arises the necessity for additional aid in reading, which may be given either by special glasses, ground with a cylindrical curve on one side and a spherical curve on the other, or by a convex eye-glass used in front of the cylindrical spectacles.

To detect and measure negative astigmatism, or negative astigmatism with hypermetropia, they must first be converted into positive astigmatism by placing an appropriate convex lens before the eye.

Negative Astigmatism with Hypermetropia (H+Ah).—The symptoms of negative astigmatism with hypermetropia, as of simple negative astigmatism, take chiefly the form of asthenopia, the visual defect being more or less completely masked by accommodative efforts. In reading there is the same degree of indistinctness of the retinal images as in simple astigmatism, but it often happens that the degree of hypermetropia is such as to neutralize any advantage from bringing the book nearer to the eye, and so the case is less likely to be mistaken for myopia. The asthenopia, too, is of the kind dependent on excessive or changing accommodative efforts, and strabismus, if it occurs, is likely to be of the convergent variety. Myopia, if it could be artificially induced, would be, to a certain extent, curative, but, unfortunately perhaps, the predisposition is wanting. Presbyopic vision may be developed very early in life, and in exceptional cases may even exist from the beginning.

Persons with negative astigmatism and negative astigmatism with hypermetropia apply for aid on account either of asthenopia or defective vision. The asthenopic symptoms seem frequently to be explained by the discovery of a certain degree of hypermetropia, but the correction of the hypermetropia by common convex glasses often fails to afford the full measure of relief expected. Much benefit may, however, follow their use from the conversion of the negative astigmatism or negative astigmatism with hypermetropia into positive astigmatism, in which case accommodative efforts cease to be useful in improving distant vision and are therefore soon abandoned. The relief is however but imperfect even in distant vision, for the disadvantage of ill-defined retinal images still remains in part or wholly, while in reading it may happen that the correction of the hypermetropia takes away the former safeguard against holding the book too near the eyes and so opens the way for the development of muscular asthenopia.

The treatment of negative astigmatism with hypermetropia should, I think, consist, 1st, in the correction of the astigmatism by convex cylindrical glasses; and 2dly, in the correction of the remaining hypermetropia if of a sufficiently high grade to make it worth the while to treat it. The principles which must regulate the treatment of presbyopia, when it appears, have been already sufficiently explained.

Mixed Astigmatism (Ahm or Amh).—In this form of astigmatism, in which the eye is myopic in one meridian and hypermetropic in the other, it will often suffice to prescribe a concave cylindrical glass equal in power to the full measure of the astigmatism, so as to convert the case into one of simple hypermetropia. Later in life, when presbyopia has appeared, this glass must be exchanged in near vision for the corresponding convex cylindrical glass, reinforced if necessary by an appropriate spherical surface. Should the degree of astigmatism be very great, the use of simple concave or convex cylindrical glasses may involve the production of an inconveniently high grade of hypermetropia or myopia, in which case an appropriate spherical surface may be added. In measuring mixed astigmatism it is necessary to eliminate accommodative interference by the use of a convex lens.

In certain cases of asthenopia occurring in connection with astigmatism, and chiefly as I believe in that form of asthenopia which I have described as dependent on the state of accommodative unrest incident to incessant changes of accommodative tension, the eye sometimes manifests such a degree of irritability as to induce almost spasmodic efforts at accommodation whenever the visual act is attempted. In such cases it may be necessary temporarily to paralyze the accommodative organs by atropia before attempting to measure the state of the refraction, and even after fitting the eyes with the most accurately adjusted glasses the spasmodic efforts at accommodation may persist to such a degree as seemingly to render the optical corrective fruitless. The special indication for treatment in this state of things is clearly to maintain, by the continued use of atropia, such a degree of accommodative paralysis as shall suffice to restrain all accommodative efforts until such time as the long continued disuse shall have overcome the tendency to spasm, supplying, of course, the temporary loss of accommodative power by such a pair of convex glasses as shall admit of the convenient use of the eyes in reading. Such a course has been pursued with striking success by Donders in several cases of obstinate asthenopia, in which, however, the existence of astigmatism is not mentioned. (See Donders, *On the Anomalies of Accommodation and Refraction of the Eye*. New Sydenham Society, London, 1864, pp. 625 and 626, also p. 289.)

In conclusion, the influence of astigmatism as a disturbing element in vision, and secondarily, as an exciting cause of disability or disease, may be thus briefly summed up:—

(*a.*) *Impaired visual acuteness* which (except in Am and M+Am, in distant vision) is masked, and to a certain extent overcome, by rapidly varying accommodative adjustments; the extraordinary exertions thus induced may be attended with unusual fatigue, and so give rise to a form of asthenopia which may be designated as

(*b.*) *Asthenopia from accommodative unrest.*—The impaired visual acuteness may lead in near vision to the habit of bringing small objects very near to the eyes in order to increase the size of their retinal images; hence a call for increased accommodative tension which (except in high grades of M with Am), may give rise to

(*c.*) *Asthenopia from excessive accommodative tension;* or, instead of asthenopia, the excessive accommodative tension, aided by increased convergent efforts may lead, in cases of H+Ah to the gradual development of

(*d.*) *Convergent strabismus.*—The excessive convergence of the visual axes necessitated by the habit of holding small objects very near to the eyes (especially in Am+M+Am), may lead to fatigue of the internal recti muscles or

(*e.*) *Muscular asthenopia;* which, by a continuance of the same habit, may take the form of

(*f.*) *Insufficiency of the internal recti muscles*, or even become developed into

(*g.*) *Divergent strabismus.*—Finally, the increased tension of the eyeball consequent upon these excessive efforts of accommodation and convergence must tend, in the presence of a certain myopic predisposition, both to excite and to aggravate

(*h.*) *Progressive myopia.*

These various disabilities may, for the most part, be overcome by the intelligent employment of cylindrical or spherico-cylindrical glasses. In certain cases of asthenopia (*b* and *c*) it may be necessary for a time to restrain unconscious accommodative efforts by the judicious use of atropia, or to train the accommodative organs by carefully regulated exercise. In cases of strabismus and of insufficiency of the internal recti muscles (*d*, *f*, and *g*) and sometimes also in muscular asthenopia (*e*) tenotomy may be indicated. In other cases of muscular asthenopia, by the employment of prismatic glasses with surfaces ground to appropriate cylindrical or spherical and cylindrical curves, we may be able to dispense with the surgical operation, and, by gradually exchanging the prisms for others of less deviation, we may succeed in training the internal recti muscles by exercise until the aid of the prisms may be altogether dispensed with. It would seem, also, that prisms must sometimes prove most valuable auxiliaries in combating the progressive tendency in myopia, especially where the acuteness of vision is somewhat less than normal, and where the temptation is consequently strong to hold the book very near to the eyes.

One additional point in the treatment of astigmatism by glasses demands a brief notice; that is, the equalization, as far as it is possible, of the two eyes. In the higher grades of astigmatism, although by the use of cylindrical or spherico-cylindrical glasses we may wholly correct the ametropia in every meridian, there still remains the great defect of distorted retinal images. Thus, a circle appears as an ellipse, etc. If the degree of the astigmatism and the direction of the principal meridians happen pretty nearly to coincide in the two eyes, this distortion is of little importance, and soon comes to be correctly estimated by the judgment. If, however, the astigmatism is confined to one eye, or if the direction of the principal meridians differs much in the two eyes, it is then impossible to provide for equal vision except by combinations of cylindrical glasses analogous to the Galilean telescope, which is obviously impracticable in ordinary cases. When, however, there is but slight irregularity in the two eyes, very great advantage may attend the exact correction of each, so as to admit of accurate binocular vision. This is effected by testing the two eyes at the same time by means of trial spectacles which have been previously fitted to each eye singly. By this test it will often be found that, owing to the disturbing influence of unconscious accommodative acts, the glasses thus selected, although seemingly well adapted to each eye singly, do not answer so well when used together. By covering rapidly first one eye and then the other, while both are directed towards a fixed object, it will be found that the adjustment of one is better than that of the other, and that the binocular result may be much improved by a slight change in the power of one or the other of the glasses, or possibly of both. When once the two eyes have been thus equalized, the existence of any remaining ametropia may be tested by the addition of a trial eye-glass containing a pair of very weak convex or concave glasses, and so the exact combination best adapted for binocular vision may be determined.

Proceeding in this way, it often happens that the rather complex combinations thus selected may be reduced to a simple cylindrical lens by neglecting insignificant quantities. This, when practicable, is a great advantage, for it enables us to prescribe at once a cylindrical glass which can be furnished by the optician from his stock, whereas the selection of a spherico-cylindric glass involves the necessary delay and expense attending the manufacture of a special glass for each case. Frequently, too, we may select simple cylindrical glasses either for reading or for distant vision, and give a common eye-glass, either concave or convex, to be used in connection with the spectacles in distant vision or in reading.

ST. LOUIS, January, 1867.

Art. VIII.—*Bromide of Potash in Acute and Chronic Affections of the Testis.* By Bedford Brown, M. D., Washington, D. C.

The action of bromine as a therapeutic agent appears to partake both of a general and local, or rather of a specific character. The known general influence which it exercises over certain organic operations of the system is mainly due to a peculiar power of sustaining the process of general nutrition in a healthy state, and of correcting many abnormal deviations from that process.

In addition to these more general alterative properties, bromine possesses remarkable sedative powers over the nervous system, without many of those serious effects resulting from more powerful narcotics. This gives it additional value in the treatment of the diseases of organs having such varied and extensive nervous communications as the testis.

An experience in its use of nearly ten years convinces us that, in addition to these properties, it has a very decided specific effect in diseases of the entire genito-urinary system. Furthermore, this local *specific* power partakes both of an alterative and sedative character. It is designed here to convey the impression that this sedative power is not confined simply to the nervous structures of this system, but is applicable to the special functions of the organs themselves, particularly the generative.

That unavoidable stimulus arising from the specific function of an organ, even when not actively exercised, the peculiar erethism given to the circulation and innervation of the parts in disease, must ever constitute a serious difficulty in the way of treatment. The exercise of the function of vision in affections of the eye, and of digestion in diseases of the stomach, afford difficulties familiar to all. So in affections of the female uterus and the male testis, the generative functions, and peculiar erethism associated with them, present serious obstacles. Hence the presence and exercise of specific function must always constitute an important element in the causation and perpetuation of the diseases of the particular organ to which they belong.

To be able to quiet the injurious excitement peculiar to the generative organs by agents which leave no permanent impression, until morbid action passes away, is a matter of no insignificant moment. Indeed the influence exerted by the excitement of peculiar function may be said to give much of that complicated character and intractability to the diseases of the generative system. Bromine appears to possess this peculiar property in an eminent degree.

The action of bromine in ovarian affections displays these triple properties (alterative, sedative, and local specific powers) in a striking degree. In a case of singular form of hysteria, in a young female of exuberant health otherwise, and in the early periods of puberty, which was clearly attributable to engorgement and subacute inflammation of the ovary, the bromide of potash given freely not only relieved the local ovarian and uterine symptoms, but gave permanent relief to the annoying hysteria.

In affections of the testis, indeed of the generative organs generally, there is established a remarkable but distressing association of nervous sympathy, not only between themselves and their varied relationships, but with the entire spinal marrow and brain. The prompt action of bromine on the two great nervous centres, the brain and the spinal marrow, accounts in some measure for the sedative influence exerted by the agent on these distressing sympathetic symptoms arising during disease of the generative organs. Hence the influence of bromine as a sedative is not confined to the testis, ovary, or uterus, but appears to diffuse itself over a considerable range of kindred organs of the pelvis which are supplied by nervous and vascular elements from a common source. Here may be observed a striking instance of its action on a class of organs having strong and close nervous sympathies, though differing materially in function. Affections of the spinal cord, and of the genito-urinary organs, have long been known to occupy peculiarly intimate relationships, and as having strong *reactive* influences in disease. The conjoint influence exerted by bromine on the important system of genito-urinary organs, and their peculiar sympathies alluded to, includes its power over the male and female bladder, the prostate gland, the urethra in a state of functional or organic disease, so that in all of such affections it becomes a valuable remedy. In urethral strictures attended with undue irritation, inflammation of the bladder and its neck, enlargement of the prostate gland, these peculiar properties are manifest; and when success is not complete, much relief is afforded. Much of this specific influence is attributable to its sedative action on the lower portions of the spinal cord. All practical physicians appreciate that extensive chain of nervous sympathies and associated phenomena pervading this class of organs, in both male and female, when one or more of their kindred are diseased. Now, under these circumstances, bromine exerts a prompt influence, through the medium of the spinal cord, on all these sympathetic phenomena.

These preliminary remarks are necessary to a proper appreciation of those which are to follow on the treatment of affections of the testicle by means of bromine and its preparations.

The sedative action of bromine is rather of a *harmonizing* character, never exciting inordinately one organ, or set of organs, while depressing the tone of others, or correcting the functional delinquencies of one at the expense of another; maintaining rather a universal system of organic co-operation essential to healthy action.

Some years since, after a favourable experience with the use of bromine in some kindred affections, we determined to test the powers of the remedy in organic affections of the testis. It was very fairly tested in the three principal forms of organic disease of these organs, viz., acute inflammation, chronic enlargement, and that class presenting scirrhous characters. The following cases comprise a succinct statement of the treatment and results of these three forms of affection.

Case 1.—A man, aged fifty, originally of robust health, but more recently presenting symptoms of functional affection of the kidneys. After a rather severe acute inflammation of both testicles, of two weeks' duration, purulent matter accumulated extensively in the vaginal sac of one side, and finally made its escape by ulceration. Subsequent to this, the case assumed a very serious form, presenting positive indications of scirrhous degeneration of both testicles. Both organs, while considerably increased in volume, were disproportionately increased in weight. They were so thoroughly nodulated and indurated as to impart the sensation to the touch of stony hardness. The epididymis of each testicle participating in the morbid process, imparted the sensation, through the scrotum, of distinct, bony formations. The pain experienced was not constant, but of a lancinating character, and, when present, of a distressing nature. The general health indicated a decided tendency to sympathize, and assume a cachectic type. Hitherto the case had been uncontrolled by all methods of treatment. The patient now commenced the use of the bromide of potassium in doses of x grs. three times daily, subsequently increased to ℈j, as an experiment under desperate circumstances, from which something favourable might be hoped. After the tenth day there were encouraging indications to persevere. At the fourth week of administration the signs of improvement were positive. From this time, during the four months which the patient continued to use the bromine, the improvement was progressive, until every vestige of disease had disappeared. There was a gradual reduction of volume and weight, diminution of pain, and absorption of indurated exudation.

Case 2.—A man, aged forty years, had been suffering for more than twelve months with enormously enlarged testis, attended with much distressing pain in the organ, spermatic cord, and lumbar region. Patient commenced the use of the bromide of potassium in ℈ doses, three times a day, and continued the remedy for five months. During the treatment the diseased organ lost more than two-thirds of its volume, but did not entirely regain its original size; but the pain and inconvenience having so far subsided, the patient concluded to discontinue the treatment. The patient informed me also that, during this time, upon any accidental suspension of the remedy, a return of the pain and uneasiness was sure to enforce a resumption.

Case 3.—A young man had a violent attack of orchitis, following gonorrhœa of two weeks' standing, from which he had suffered much pain and annoyance, depriving him of rest both day and night. After the operation of a brisk cathartic, he took ʒss of bromide of potash three times daily, in connection with hot water applications to the diseased organ, applied profusely and repeatedly. The earliest effect of the remedy observed was the positive diminution of pain, and much relief to those annoying sympathetic phenomena attending. This peculiar feature of the action of bromine in the most of cases has attracted my attention so positively as to cause me to distinguish it by the term *brominism*. This is the saturation of the system with the agent to a point when the pain of inflammation is relieved, and nervous irritation and restlessness quieted. The patient continued the treatment for a period of two weeks, when he was completely relieved.

I wish to refer here to the influence of bromine on those distressing sensations of *weight* and *dragging* of spermatic cord, pain and uneasiness in the lumbar and sacral regions, associated with enlarged testicle. These peculiar symptoms, separate from mere mechanical causes or influences, must be very much due to the reflex functions of the cord. Both the afferent and efferent nerves of these organs must have a common point or centre for *insertion* and *origin.*

The prompt action of bromine on the spinal cord, and on the various nerves arising from the lower portion of the cord, and abundantly distributed to the genito-urinary organs, accounts for much of its value in the treatment of the diseases of that associated system, apart from any mere alterative powers. There is much reason for believing that the influence exerted over the peculiar nervous phenomena of these organs is due to a primary action of the agent on the great nervous centres alone, particularly on that of the spinal cord. The action of bromine, indeed, on these latter structures, and its reflection thence on the functions of important organs, furnishes suggestions of peculiar interest.

ART IX. *Remarks on the Operation of J. Marion Sims for Dysmenorrhœa, depending on Anteflexion of Uterus.* By J. C. NOTT, M. D., Baltimore.

BUT a few years ago the words Dysmenorrhœa, Amenorrhœa, Leucorrhœa, Polypi, Ulceration of Os Uteri, et id omne genus, called up in my tortured brain a hideous uterine hydra, that I had been fighting unsuccessfully, with all the odds against me, and so unsatisfactory were my efforts that I actually turned away with disgust from this class of maladies, and threw them off upon professional colleagues. The physiology of the uterus was little known, its pathology less, and least of all did we understand the diagnosis of its endless maladies.

But, thanks to the teachings of Dr. Simpson, of Edinburgh, and our countryman Dr. J. Marion Sims, a better day is dawning; an immense stride has been made in positive knowledge, and although we have yet much to learn in this department, it must be confessed, that it really begins to assume the aspect of a science instead of blind empiricism; many of these diseases, before obscure, are now easily diagnosed and treated, on fixed rational principles. The uterine sound, bi-manual palpation, Sims' speculum, sponge tents, improved position of the patient, &c., now enable us to diagnose with accuracy many important diseases that previously were merely guessed at and treated by the most vague empiricism.

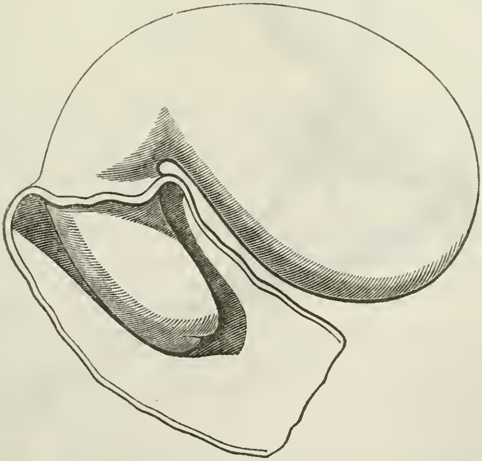
As already remarked, we have yet much to learn in uterine surgery and therapeutics. All reformers, whether in politics, religion, or medicine, are prone to run into extremes, and while on the one hand they often fail to follow truth onwards in a direct line, they on the other leave behind errors to be corrected by other sober minds that follow them. Bennet ran wild on diseases of the *os and cervix uteri,* and committed excesses with his caustics. West, the representative of another school, takes the opposite extreme and attaches comparatively little importance to these affections. Then come Simpson and Sims with the knife and sound in hand, and tell us that many of the maladies heretofore treated by caustics, washes, leeches, drugs, &c. are not to be treated without the knife. Now they are probably all wrong and all right; more light is wanted, and the *juste milieu* is yet to be sought.

I confess that I come back, after reading the works of Simpson and Sims, to uterine surgery and therapeutics, with feelings very different from those which induced me to abandon this practice a few years ago. I now feel competent to diagnose and treat many cases which were formerly beyond my reach, and shall be much gratified if I can aid in calling the attention of others to the points at issue.

The first case to which I ask attention is the type of a large and troublesome class, and one which has interested me greatly.

Case I. *Anteflexion of uterus; elongated, conical neck, and contracted os; dysmenorrhœa; relieved by amputation and incision of neck.*—Mrs. —— came from the country to consult me on 10th Dec. 1866; aged 23; been married ten months; commenced menstruating at twelve years; had no difficulty for two or three years, after which dysmenorrhœa commenced and has continued without intermission ever since, causing violent suffering for the first one or two days, and sometimes more, of each period; menstruation usually lasted five or six days, and the discharge was more profuse than natural; complexion good; general health pretty good: nervous system much deranged at the monthly periods.

Fig. 1.



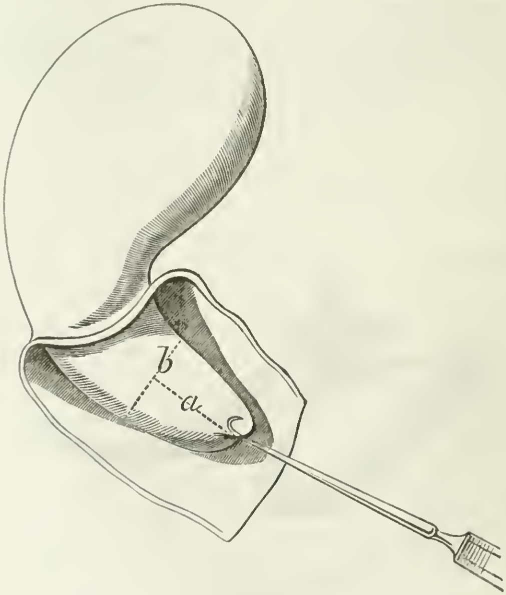
On examination, the uterus was found low in the vagina and greatly anteflexed; the fundus was readily touched by the finger, behind the symphysis, and by passing the finger onwards in the vagina the os was easily reached, the neck being curved downwards and forwards. Fig. 1 gives a sufficiently accurate idea of the form, size, and position of the organ. The neck was small, conical and projected about an inch below the reflexion of the vagina in front and a little more behind. The os was round and small; a sound, very much curved, was with difficulty introduced a little more than two inches; the whole organ was under size. Although married about ten months had never conceived, and there was every reason to believe that both dysmenorrhœa and sterility were results of the anteflexion, elongated conical neck, and contracted os.

By a little manipulating with one finger in the vagina and the opposite hand on the abdomen, it was easy to work the fundus up into its normal position. As the fundus went up the long curved neck swept down in the opposite direction, as the movements of one end of a little crooked cucumber would be governed by those of the other end. The os uteri by this movement was brought within an inch and a half to two inches of the vulva.

Having satisfied myself fully as to the nature of the case, and the applicability of the principles laid down by Dr. Sims, I, on the 17th Dec., 1866, with the assistance of my friends, Drs. F. E. Gordon and J. T. Gilmore, proceeded as follows:—

The patient was placed in Sims' "semi-prone position," and fully chloroformed; the vagina being then fully exposed by Sims' speculum, a tenaculum was hooked into the anterior lip of the os, which, with a very little force, was drawn down to a convenient point for operation, Fig 2.

Fig. 2.



With a pair of strong straight scissors, the neck was then divided on either side, through its entire thickness, from half to three-quarters of an inch, as seen in Fig. 2, dotted line *a*, according to Sims' "bi-lateral" method. While held in this position with the tenaculum by an assistant, as seen in Fig. 3, the *posterior* lip was seized with another tenaculum and removed at a blow with a pair of curved scissors, as seen in Fig. 3. Next, in accordance with the rule of Dr. Sims, I introduced a blunt pointed tenotomy knife into the cervical canal, and carrying it up to the *os internum*, made an incision *backwards*, as seen in Fig. 3, dotted line *c*, superficial at the *os internum*, but extending through the entire thickness, as the incision reached the truncated margin. This last cut straightened the canal, gave an easy entrance into the cavity of the body of the uterus, and a sponge tent was introduced, as seen in Fig. 4, to be left *in sitû* with the view of preventing healing by the first intention and consequent closure of internal os — see sponge tent *d* extending up into cavity.

Fig. 3.

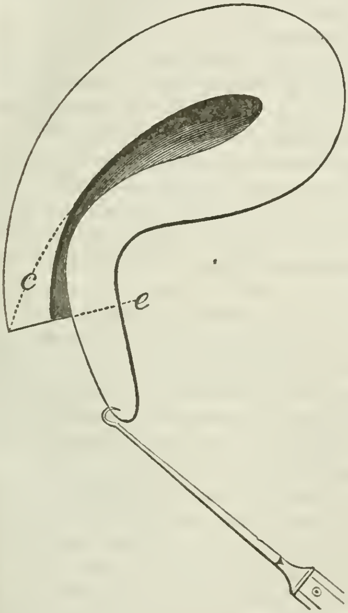
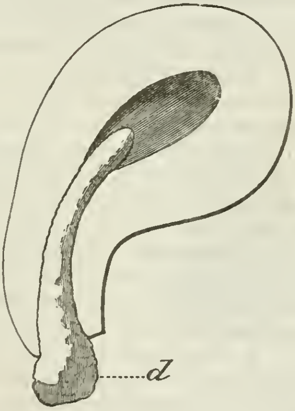


Fig. 4.



The operation was then completed by removing the anterior lip with the curved scissors, as seen in Fig. 3, at dotted line *e*. Fig. 4 represents the operation after it is completed: the neck amputated, the internal posterior cut made, and the sponge introduced.

A glance at Fig. 2 shows the great advantage of the small tenaculum hooked into the *anterior lip;* the traction on the anterior lip not only brings down the os, but, to a great extent, *corrects the abnormal flexion* of the organ, thus facilitating greatly the *internal* incision of the cervix and the introduction of the sponge tent.

By comparing my operation with the plan laid down in such cases by Dr. Sims, it will be seen that I have deviated in two important particulars —1st. I amputated the *posterior* lip first, instead of the anterior. 2d. I introduced the sponge tent *immediately*, while Dr. Sims usually allows several weeks to pass before using the tent.

Now a glance at Fig. 3 shows that if the *anterior* lip had been first removed, and the traction made with the hook on the posterior instead of the anterior lip, the opening into the cervix would have been *closed*, and the introduction of the tent made difficult, if not impossible. By keeping a firm pull on the anterior lip, after the posterior one is amputated, as in Fig. 3, the channel is pulled open and the tent slips in with the greatest facility. The internal cut backwards is also rendered very easy by the traction on the anterior flap.

Dr. Sims does not introduce a tent *at the time of this operation*, and tells us that one of the objections to his operation, and difficulties to be contended against, is the tendency of the cervical canal to contract again in spite of his internal incision. To overcome this contraction he tells us that a second operation is usually necessary by incision and tents; so great, in fact, is the tendency to contract that not unfrequently the cutting and tents have to be repeated several times.

Fig. 4 represents the uterus after the amputation of the neck is completed, the internal incision made, and the tent introduced.

All the above steps of the operation were easily and quickly accomplished, but I must now call attention to an oversight, for which I deserve censure. When, after the bi-lateral incisions were made, the posterior flap was cut off, an artery was seen spirting from the truncated surface. I might then (as the uterus was firmly held by the tenaculum in a very convenient position) have easily ligatured the vessel; but never, in any amputation of the cervix uteri, having had troublesome hemorrhage, I did not, with the *liquor persulphas ferri* at hand, anticipate it here. Without waiting for the arrest of hemorrhage, I cut off the anterior flap at once and depended on the tampon. A wad of cotton, saturated with one part of the iron to three of water, was thrust down to the bottom of the vagina and dry cotton packed in on this to hold it in place. In spite of all this hemorrhage continued to such an extent that I thought it prudent, at the end of an hour, to remove all the dressings and coagula; a bivalve speculum was introduced; the vagina thoroughly sponged out and again carefully and tightly tamponed with the iron and cotton.

Still the blood continued to trickle slowly through the cotton for two hours, and symptoms of prostration became so marked as to make me uneasy. I then resorted to the following expedient: A glass syringe with a long nozzle charged with four ounces of the persulph. ferri, diluted as above, was inserted deep down, beside the cotton, to the bottom of the vagina, and the whole contents gradually driven in; I then placed my hand on the vulva and pressed firmly for a few minutes, so as to retain the injection and give time for coagulation of the blood. This produced the desired effect; the hemorrhage ceased; the patient soon reacted, and by nine o'clock at night (eight hours after the operation) she was well enough for me to take my leave for the night without further anxiety. It had been necessary during the evening to give her opium and brandy.

18*th*. In satisfactory condition this morning; did not sleep much during the night; was a little nervous; pulse good, and is quite cheerful.

20*th*. Has continued well; no pain or fever; takes plenty of nourishment and sleeps well.

The distension of the vagina from the tampon and coagulated blood has been a source of a good deal of uncomfortable feeling, and to enable her to pass her urine, the part of the cotton and coagula in front pressing on bladder and urethra were removed the morning after the operation. The vagina was as completely filled by the cotton and coagula as it would have been by the head of a fœtus at term. The coagula too made by the persulphate of iron are as hard as cheese. By means of a spoon-handle I prized out part of it yesterday, and the remainder to-day, together with the last of the cotton, and the sponge tent, which was found loose in the vagina. She was greatly comforted by the removal of this mass, and a free washing out with tepid water and chloride of soda. No examination of uterus yet made.

29th. Has progressed well in every respect since last report; requires no treatment but ablutions with tepid water and Darby's prophylactic; has been sitting up and walking about the room comfortably. Has had for two days previous to yesterday a little bloody discharge, *without any pain*, which was doubtless her regular catamenial flow, though less than usual in consequence of the recent hemorrhages she had undergone. Examined the os uteri with speculum and found the cut surface covered with healthy granulations and healing well. Permitted to go home with the injunction to return to Mobile by the 15th Jan., being two or three days in advance of the next menstrual period.

Jan. 19. Arrived in town yesterday looking and feeling well. On examination I could detect neither anteversion nor flexion; the position of uterus seemed normal; the os *in sitû*, with a patch of granulations about the size of the little finger nail, not yet healed over. *Catamenia came on last night moderately, naturally, and without the slightest pain*, and this morning I found her walking about the room and anxious to go out shopping.

25th. Catamenia ceased on the fifth day, having passed through without discomfort. Discharged and sent home; apparently perfectly cured, except a little speck of granulations which will doubtless heal in a few days; directed to use with a syringe night and morning a heaping tablespoonful of common salt to a quart of water. I may here remark that this is one of the most invigorating and soothing washes for the vagina I know, and this idea was taken from an article in the London *Lancet* by Dr. Thudichum on injections of the nostrils; he found the salt and water much less irritating to the Schneiderian membrane than simple water, and this I have proven again and again in ozæna.

I repeat that the above case is typical of a large class that heretofore have been incurable, and although the procedure recommended may not be infallible, I feel assured that, if properly managed, it will bring relief to many whose lives are passed in suffering.

Sponge Tents.—Before closing I propose to say a few words on this subject. If properly made, and properly used, they are very useful in many of the diseases of the uterus, and may supersede the knife in a portion of those cases in which cutting is insisted upon by Dr. Sims.

The objections to sponge tents, as generally made, are, 1st, from their roughness, bluntness, flexibility, and rapid absorption of moisture, they are difficult to introduce; 2d, after remaining in the neck of the uterus for twelve or twenty-four hours, the sponge becomes so entangled in the raw or granulating surface, that it abrades the surface and often causes bleeding when extracted; 3d, of all materials of which tents are made, sponge is the most putrescent, irritating, and disgusting. To obviate these objections I have used in making them *a paste*, instead of gum Arabic, and a covering of *goldbeater's skin.* The sponge is cut of the desired size, thoroughly saturated with the paste, and then with a strong wire inserted to support it, is firmly wrapped with twine; it is then trimmed and smoothed with sand-paper; in short, substituting the paste for mucilage of gum Arabic, the tents are made in the usual way. After the tent is thoroughly dried, and finished off, envelop it in a piece of goldbeater's skin as wide as the tent is long, and in length four or five times its circumference. The skin is smeared on one side with the paste and made to envelop the tent in its whole length like the covering of a cigar. After the covering is thoroughly dry, a number of perforations should be made, with the point of a penknife, all along its sides from end to end, in order to allow moisture to get into the sponge and produce expansion; when the ends alone are left open the expansion is too slow; to be certain of rapid expansion I usually place upon the extremity a tampon of cotton well moistened with glycerine and water to supply the requisite moisture. A tent made in this way is smooth, firm, and easily introduced, and what I consider a very great advantage, the goldbeater's skin, while the sponge expands, gradually unfolds, so as to form a constant barrier between the sponge and uterine surface. All the objections to the *sponge* tent are thus obviated, and I do not see how any thing of the kind can be made more perfect.[1]

If these tents are made with a small point you can, if you think proper, use any amount of dilating force, as they are as inflexible as wood. They however absorb moisture rapidly and become perfectly soft. A string should be attached to the outer end for its removal. In one case where I omitted this, the tent slipped into the womb and gave severe pain for fifteen minutes. The pain ceased and the tent was expelled in the course of the night. The wire should be removed before introduction.

---

[1] The paste I have made by the following formula, which was copied from a medical journal. One advantage over the gum Arabic mucilage is the antiseptic qualities of alum and lead.

"*White paste which will adhere to any substance.*—Make the following mixture: Sugar of lead, 720 grains; alum, 720 grains; both are dissolved in water. Take two and a half ounces of gum Arabic and dissolve it in two quarts of warm water; mix in a dish one pound of wheat flour, with the gum-water cold, till pasty in consistence; put the dish on the fire and pour into it the mixture of alum and sugar of lead; shake well and take it off the fire when it shows signs of ebullition. Let the whole cool and the paste is made. If it is too thick add some gum water till of proper consistency."—*Journal of Applied Chemistry.*

I keep this paste on my desk for general use, and find it excellent.

Art. X.—*Artificial Anus from Gunshot Wound, operated on by Free Abdominal Section.* By R. A. Kinloch, M. D., late Surgeon of the Roper Hospital, Professor of Materia Medica and Therapeutics in the Medical College of the State of South Carolina.

Lieutenant T. G. B. was wounded in the abdomen on the 22d of October, 1862, at the battle of Bee's Creek. The ball entered below the right anterior-superior spinal process of the ilium, traversed the abdominal walls obliquely upwards from right to left, making its exit about three inches to the left of the median line, and below the umbilicus. The track of the wound, at its point of greatest depth, about two and a half inches to the right of the median line, implicated the peritoneum and the intestine.

Symptoms of shock were in due time followed by those of serious intestinal inflammation, with vomiting, constipation, excitement, tender abdomen, and disposition to collapse. On the eleventh day after the injury the more violent symptoms began to subside, with purulent and fecal discharges through the orifice of entrance. More than a month after the reception of the wound, a fecal operation per rectum was induced by an enema. This was the only one, and was believed to consist merely of the contents of the larger bowel that had cumulated previous to the injury.

Up to this time Lieut. B. had been under the care of my friend, Dr. Dupont, of Grahamville, S. C., to whose skill and devoted attention he was indebted for having thus far survived the severe injury. At the request of Dr. Dupont, I first saw him on the 13th of February, 1863. He was bedridden, feeble, and emaciated; there were several diffusive fecal abscesses discharging through fistulæ, and connected with sinuses leading to the now fistulous orifices of entrance and exit of the projectile. As a palliative means of relief, several sinuses were laid open, the orifice of entrance enlarged, and a seton passed through the track of the wound to limit the diffusiveness of the abscesses and direct the discharges to one dependent opening. Lieut. B. remained under the care of Dr. Dupont, as he was seventy miles from Charleston, and I could only hope to see him occasionally when other duties called me to his neighbourhood.

I visited him again on the 20th of March. The superficial diseased condition had somewhat improved, but I found it necessary to open another sinus in order to ascertain more correctly the position of the intestinal lesion. The finger could be passed into the perforation, but the great depth of the wound prevented any accurate knowledge of the relation of parts. I now advised patient to remove to the city, where I could better give him my attention. Early in April he suffered from increased abdominal pain, with febrile excitement and subsequent jaundice. For this condition he was treated with mild mercurials and opiates, by my friend Dr. Wm. H. Anderson, in the absence of Dr. Dupont.

On the 11th of May patient was sufficiently relieved of the late attack to start for the city. He travelled with great difficulty by ambulance and railroad, being compelled to remain recumbent. Upon his arrival here, as an attack upon the city was threatened, his destination was changed to the Summerville Hospital, twenty-two miles distant. I visited him there on the 27th of May, and through the kind courtesy of my friend, Surgeon E. E. Jenkins, then in charge of the hospital, I was enabled to assume charge of any operative procedure to be instituted in the case.

A thorough dissection of the abdominal walls about the contour of the opening, alone enabled me to correctly appreciate the intestinal lesion. By exploration with the finger and with a bougie, I now ascertained that the *artificial anus* communicated only with the upper or proximate portion of the intestine, which passed backwards and to the left; the lower or distal portion could not be discovered. The discharge which now oozed from the opening was a thin brown liquid, containing whitish particles; it was evidently composed in part of chylous liquid.

I expressed the opinion that a prospect of escape from early death could only be offered by an operative procedure, which would have for its object the direct union of the divided intestine, and restoration of the continuity of the canal. The only feasible plan seemed to me to consist in the hazardous proceeding of *opening the peritoneal cavity as the essential and primary step.* Without such an effort to save, death was only a question of time, as emaciation and exhaustion were progressing surely. After a full understanding of the serious character of the operation, and the many chances against its success, Lieut. B. decided, with a manly heroism, to accept the little hope it offered.

On the 8th of June, having been previously notified by Surgeon Jenkins of the favourable condition of the patient since my explorative proceedings of the 27th of May, I visited the hospital, and the patient being under chloroform, practised the following operation :—

The peritoneal cavity was opened by an incision in the median line, starting from just below the umbilicus, and extending downwards for three and a half inches. The index finger was then passed into the cavity, and under the right lip of the wound towards the seat of the artificial anus; in its passage some adhesions of the intestines to the peritoneum were broken up. A second incision was now made through the thickness of the abdominal walls, beginning at the lower end of the perpendicular wound, and running transversely to the artificial anus, so as to raise a triangular flap. The cavity was thus thoroughly exposed; the mass of intestines protruded; and with care I soon traced up the portion of intestine which ended in the artificial opening. The intimate adhesions of the gut at this point were next broken up with my fingers, and by light touches of the knife. The barrel of intestine was found to be thoroughly divided, or so deeply notched as practically to amount to division; and while the upper end was fixed to the contour of the opening through the abdominal parietes, the lower was reflected towards the cavity, and thus was the continuity of the intestinal channel interrupted. The upper end was of normal, or rather increased calibre, while the lower end was contracted, and the coats much thickened. As the next step in the operation I excised about half an inch of the upper, and about two inches of the lower portion of the gut, so as to procure comparatively healthy surfaces for apposition. The mesenteric portion of the bowel was not divided. But one small vessel required a ligature. My desire was then to invert the lower extremity of the gut, and, by the suture of Jobert, drag the upper end into this lower canal, so as to secure full contact of the peritoneal surfaces of either portion. But the contracted condition of the lower orifice precluded this plan, and compelled me to resort to simple apposition of the ends. These ends I fixed carefully together by a number of points of interrupted silver wire suture, and then by three additional wires, passed after the method of M. Lembert, I managed to bring together some portion of the opposing serous surfaces. During the operation, assistants, with soft sponges, carefully prevented blood from entering the deep portion of the cavity, and, by means of soft towels wrung out of tepid water, protected the mass of intestines from undue exposure. The abdominal wounds were finally closed by stout silk sutures passing through the entire thickness of the edges; the ligature attached to the artery was brought out at the lower extremity of the transverse wound, and thus served to retain the intestine at this point. A soft compress, and a broad bandage around the abdomen completed the dressing.

The operation had been necessarily protracted, and during the performance the patient was kept entirely insensible by chloroform. Upon its completion, symptoms of depression were urgent, and required the free use of morphia and brandy. In the course of an hour he rallied sufficiently to be safely removed to bed. I returned to the city, and left the patient in charge of Surgeon Jenkins. The after-treatment advised was that with opiates and light nourishing diet.

From Surgeon Jenkins I learned that the case progressed with entire satisfaction ; reaction was but slight, and called for no special interference. Patient continued hopeful and cheerful. The abdominal wound united successfully. On the third day after the operation some of the intestinal sutures gave way or cut through, and a fecal discharge of the usual character took place through the lower angle of the abdominal wound. On the seventh day patient complained of some abdominal fulness; an enema was administered, and brought a good feculent stool, with relief of uneasiness. From this time the intestinal flow through the natural way became fully established, and the bowels responded naturally; the discharge by the fistula, however, continued. Patient improved daily in strength, and began to gain flesh. In three weeks from the date of operation he was enabled to sit up in a chair fixed upon rollers, and to propel himself about the hospital ward. On the 10th of July he felt well enough to leave the hospital and return home, a distance of eighty miles by railroad. I had previously advised against any farther interference for the present. A month after reaching home he was enabled to exercise on his feet with the aid of crutches, and his nutrition and strength improved daily.

My engagements prevented me from seeing Lieut. B. again until the 18th of January, 1864. I found him then greatly improved in appearance. He was still using his crutches, but rather from habit than necessity, and was disposed to lean forwards when walking, to relax the abdominal muscles. The fistula still discharged a thin brown matter, varying in quantity at different times. He had daily stools of a healthy character. A careful examination of the fistula disclosed a condition resembling the artificial anus consequent upon sloughing of the intestine after strangulated hernia. The gut presented an angle to the abdominal opening, and its channel was divided, in part, by a bridge or spur-like process, over which the liquid contents had to mount in passing on towards the rectum. This was evidently due to the projection of the mesenteric portion of the bowel between the lips of the intestinal wound where these were united to the abdominal wall. As the first step towards curing the fistula, I concluded that this bridge must be destroyed. To accomplish the object, I visited the patient on the 11th of March, and adjusted Dupuytren's *enterotome*, with directions for the blades to be very gradually approached from day to day until the intervening tissue was divided. Patient was left in charge of Dr. Anderson. Saw him, with Dr. A., on the 28th of March ; learned that the *enterotome*, under the almost too diligent attention of patient, had cut through on the fourth day, but without any unpleasant results. The discharge from the fistula had promptly lessened in quantity, and now was hardly more than a brown serous liquid; the opening was smaller, and the spur could not be detected. As the tissues about the fistula were of a cicatricial character, I concluded that the actual cautery would be better suited for closing the orifice than the use of pins, or any form of plastic operation. I consequently applied a small button-shaped cautery to the contour of the abdominal opening, protecting the intestine by a little wet lint, forced more deeply into the canal.

Circumstances have ever since prevented me from seeing Lieut. B. From Dr. Anderson and himself, however, I have gathered further particulars of his case.

The cautery was repeated by Dr. A. several times during the months of April, May, and June, and at first promised good results. Finally an effort was made by Dr. Anderson to close the opening by means of deep-curved steel pins. This resulted also in failure. After this, Lieut. B. was forced to leave his home and go into the interior of the State, where he received no further surgical treatment. Upon his return home, after the close of the war, I received, in a letter dated June 24th, 1866, the following additional information :—

> "The wound is still open, and I can feel, with the end of my little finger, the same wall or impediment that you once cut away with the long-forceps. It is not, however, so much of an impediment but that I would risk having the wall of the abdomen closed above it. There is frequently something like a hernial protrusion at the wound, but the compress keeps this back. My evacuations by the natural channel are very regular. My general health is good. I weigh *over two hundred pounds*, being not quite as heavy as before I was wounded. I can ride half a day in a buggy without fatigue, and can often walk a mile without resting; but generally I suffer if long on my feet. * * * * *
>
> "The discharge from the wound varies constantly. Usually it is the colour and consistency of soft fecal matter, but at times I am troubled with a thin, slimy, serous flow, which escapes under the compress. I can commonly go from morning to night without washing, for the thick feces passes without escaping. A great deal depends on my diet; fresh meat always occasions a serous discharge, and most vegetables disagree. My diet is chiefly corn-bread and hominy, with salt ham and a great deal of milk. I think you could still do something more for me, and, had I the means, I would come to you without delay."

I concur in the expression of regret contained in the last sentence quoted, for I feel confident that surgery is capable of completing the cure in this interesting case. I have been induced to offer the notes for publication with no view of claiming the degree of success aimed at by the several operative procedures instituted, but because the history appeared to me to possess the following points of interest :—

1. It adds another instance of recovery after severe gunshot wound of the small intestine.

2. It is an argument against the almost universal practice of abandoning intestinal lesions to nature, rather than risk opening the peritoneal cavity.

3. It is a record of successful conversion of an *artificial anus*, with its attendant symptoms of failing nutrition, into a *fecal fistula*, compatible with good nutrition, and a high degree of health and activity.

4. It is illustrative of the readiness with which the function of a large extent of intestine can be resumed after a suspension of over *seven months*

(from October 22d, 1862—the day of the reception of the wound—to June 8th, 1863, the date of the operation for restoring the continuity of the intestine).

5. It must serve to encourage that hopefulness and boldness so essential to progressive surgery, and at all times preferable to despair.

ART. XI.—*Case of Elephantiasis Græcorum, treated by Ligature of the Common Carotid Artery on both sides.* By J. M. CARNOCHAN, M. D., Surgeon-in-Chief to the State Hospital, New York, formerly Professor of Clinical Surgery, &c. (With two plates.)

PATHOLOGICAL combinations exist, at times, in certain morbid growths, involving the cutaneous and immediate subcutaneous tissues, which render it somewhat difficult to give them a definite position according to conventional classification. Certain enlargements of the limbs, scrotum, labia majora, face, &c., usually accompanied by hypertrophy of the skin, distinct from phlegmon, from œdema, and from bloody tumours, have long been, and are still, described or designated under the name of elephantiasis arabica or arabum.

Patients affected, however, with elephantiasis græcorum, have sometimes presented not only œdema of the lower limbs, which is common, but the true hard and bulky enlargement of Arabian elephantiasis also.

The case described below, and carefully represented in the accompanying plates, was partially of this mixed character. The characteristic signs or manifestations, however, peculiar to elephantiasis græcorum, were, throughout its progress, so predominant that it can only be considered properly as a case of that disease.

We are informed by Pliny that the malady was indigenous to Egypt—"*Ægypte peculiare hoc malum*"—but we learn from other Latin and Greek authors, as well as from the writings of more recent observers—among whom may be mentioned Larrey, Heberden, Robinson, Adams, and Rayer—that the disease has been met with in most parts of the globe. It is undoubtedly very rare in the United States, where but few cases, as far as I am aware, have been seen.

CASE.—Mrs. Phebe B. was born in New Jersey, in the year 1814, of healthy parents, in good circumstances, who were also natives of the same State. Her father died of disease of the kidneys at the age of eighty, never having had any morbid growth; her mother also enjoyed good health until near the period of her death, which occurred at the age of eighty-five. She has three sisters and two brothers, who have been free from unusual disease, and are still living and healthy.

Until the age of twenty-eight, Mrs. B. had always been free from bad health, and, in fact, was supposed to have an excellent constitution. Her complexion was fresh and healthy. About this time (1844), without any special cause, the disease began to develop itself below the corner of the mouth, on the right side of the face, in the form of a small pimple not larger than a grain of hemp-seed, and presenting on its surface a small whitish speck, like the secretion of a cutaneous follicle. This, when pricked or squeezed, exuded a small quantity of thin bloody fluid. The pimple remained stationary for some months, and then began to enlarge, assuming the shape and appearance of a discoloured, smooth, warty excrescence. This soon increased to the size of a filbert, and was removed by the knife, by a medical practitioner of the district, under the supposition that it was an encysted tumour. After this slight operation the bleeding was unusually profuse; caustic was applied upon the bleeding surface.

In about a year after the first operation, in close proximity to the cicatrix, a similar growth began to make its appearance, and, in about six months, had reached the same size. This was also removed, and was again attended by unusual hemorrhage. The adjoining tissues remained normal for seven or eight months, but were again attacked by another mammillated growth, which became more irregular on the surface, and of a reddish hue, attaining the size of a walnut in about two years. Excision was again resorted to for the third time, the bleeding, as before, being very profuse.

At this stage of the disease the patient, who had not been medicated before, began to take various medicines internally—such as sarsaparilla, iodine, iron, &c. A special "cancer-doctor" was also consulted, who prescribed some unknown compound without benefit. The disease was not abated by constitutional treatment, but continued to spread, the tubercular elevations becoming multiplied, and extending from the original focus of the disease in various directions. The patient now visited New York, and consulted an eminent physician of that city, who prescribed internal and external medication, baths, &c. She continued under medical treatment with some improvement of the general health.

She had now been suffering for ten years, from 1844 to 1854, without receiving any material benefit from treatment in impeding the progress of her disease. In the course of the extension of the disease the parts were always affected by increase of temperature, by pricking, burning, and painful sensations, and discoloration of the surface.

From the year 1854 up to the time I was consulted in March, 1858, the morbid growth assumed a more diffusive shape, and continued gradually to enlarge, the mammillated tubercles continuing to be evolved in increased numbers and size, invading the organs of sense, and giving to the countenance a most hideous appearance. In fact, the face had now assumed the aspect which is characteristic of elephantiasis græcorum, or the leontiasis of some authors. The tissues, however, under and around the chin and lower jaw, and on the neck, had assumed the hard pachydermatous nature and appearance of elephantiasis arabum.

By reference to the accompanying plate it will be seen that the disease had become developed into huge proportions, and that the face, head, and neck presented a misshapen, bulky, deformed mass. [*Vide*, Pl. I.]

On the 18th November, 1858, Mrs. B., when first seen by me, was in the following condition: The face, head, and upper part of the neck were enlarged to a frightful extent, sanctioning, by the character of the deformity, the term of leontiasis, used by the ancients to designate the disease. The morbid mass extended from an irregular transverse line a short distance above the superciliary ridges, downwards to the neck, as far as another line drawn across about an inch below the cricoid cartilage, and running backwards as far as the posterior margin of the sterno-mastoid muscle. Another line drawn upwards from the posterior extremity of the last, and passing upwards behind and above the mastoid process, formed the boundary of the main mass in this direction; while, anteriorly, the disease passed over the mesian line, and occupied in a similar manner the other side of the neck, and three-fourths of the other side of the face. The morbid growth was more developed on the right side than on the left. On the back of the neck, as low down as the sixth cervical vertebra, the skin was wrinkled, irregular, discoloured, scaly, and studded with flattened elevations rising slightly above the level of the skin, which was also similarly affected on the supra-clavicular regions and the upper part of the sternum. The hairy scalp was in the same condition, more particularly on the right side of the head.

The colour of the skin or complexion was a dark dingy maroon or purplish hue in the region of the face; on the neck the colour was dull and leaden, without any reddish tinge. There was a general sensation of harshness imparted to the touch in passing the hand over the mass.

The cutaneous tissues on the lower part of the forehead were discoloured, thickened, and furrowed with wrinkles. On the face the tissues were somewhat semi-elastic and boggy, and softer than on the region of the neck; here the tissues were positively pachydermatous and dense like elephantiasis arabum.

The scalp had become partially despoiled of hair from the disease; some of the hair also of the eyebrows had fallen out, and part of the eyelashes were lost. The eyelids were swollen, and so much hypertrophied as to project beyond the level of the forehead, and completely occlude the ocular fissure. Vision, on the right side, was entirely obstructed, and the power of elevating the eyelid was altogether lost. The nose was enlarged, irregular on the surface, and pushed towards the left side, where the tissues were not quite as tumid. The nostrils were blocked up and misshapen. There was no sense of smell. The alæ nasi were uneven and knobby, and merged into the rough and dense mass of the cheeks and side of the face. The cheeks, particularly on the right side, were much swollen and elevated beyond the natural level, rough, and deeply furrowed.

The lips were much hypertrophied, thickened, and deformed, and the mouth so occluded as to scarcely admit of the passage of a teaspoon into the cavity. The upper lip had an elongated appearance, rough, but not tuberculated, while the lower was beset with a cluster of mammillated elevations. Nourishment was taken with great difficulty, and mastication was almost impossible; taste imperfect.

The ears, particularly the right, were much enlarged and tumefied. The right ear stuck out or projected from the head; the *concha, tragus, anti-tragus,* and *lobule,* presenting one large, irregular furrowed mass of a dusky reddish hue. The *meatus externus,* on this side, was completely obliterated. Sounds were almost inaudible. The chin and neck presented a huge hypertrophied mass, extending to within a short distance of the sternum and clavicle. The tissues here were harder and denser than at other parts, rising above the level of the natural surface about four inches, and studded with numerous tubercular and mammillated elevations.

The integuments of the trunk and extremities, with the exception of that on the sternal and supra-clavicular regions, did not present any manifestation of disease.

The general health of the patient was not good; she had sleepless nights, and had to be bolstered up in bed on account of the difficulty of breathing, arising from the pressure of the diseased mass in the neck upon the trachea. She had but little appetite, and was frequently feverish. The menstrual function was regular.

The patient, thus suffering and disfigured, with the disease progressing at a rapid rate, was willing to submit to any treatment which promised amelioration or relief. Therapeutic means the most approved had been unavailing, and it was futile to repeat them. It occurred to me that the morbid nutrition of the parts might be modified in a salutary manner by intercepting the main arterial supply, and that the perverted vitality or morbid action of the organic nerves supplying the capillaries, would in this manner be best reached and impressed.

I was also inclined to believe that in this instance the capillaries and smaller vessels were at fault by positive change of structure, and that at some portions of the mass the smaller arteries and veins were diseased and enlarged, as in cases of accidental erectile tissue. With these views, I proposed to put a ligature on the common carotid artery of one side, and if necessary, after a proper interval, to secure the arterial trunk on the opposite side.

Operation.—The operation of tying the right common carotid artery was performed on the 28th November, 1858. On account of the general thickening of the tissues, the usual relative points of guidance were not visible, and could not be made available in the first steps of the operation. The assistants being suitably arranged, and the patient placed on the table and put under the influence of chloroform, the head was turned slightly towards the left side. The external incision was then made through the dense structures, following the direction of a line drawn from the anterior part of the mastoid process to the internal extremity of the clavicle, commencing about an inch above the level of the upper border of the thyroid cartilage, and extending downwards for the distance of three inches and a half. The first incision divided the skin and platysma myoides, both of which were blended together, hard and vascular. The muscular fibres of the platysma were changed and effaced. The next incision was carried deeply, two-and-a-half inches, through dense infiltrated and vascular cellular tissue, and exposed the anterior border of the sterno-mastoid muscle. Beneath this border the deep cervical fascia, and the sheath of the vessels formed by it, were then laid bare. The pulsations of the artery could now be distinctly felt, and the internal jugular vein was seen bulging up, swollen with blood at each inspiration. By means of curved copper spatulæ, the lips of the wound were kept apart, and the hemorrhage, which had been profuse, was stopped by securing the bleeding vessels. The omo-hyoid muscle crossing the large vessels, and the loop of the hypoglossal nerve resting on the anterior surface of the sheath, could now be seen. The muscle was hooked upwards, and the deep jugular, which partially overlapped the artery, was gently pressed aside. The sheath of the vessels was now cautiously opened, and the artery separated from the vein to a very small extent by using the director very delicately. The vessel was now secured by passing the aneurism needle, armed with the ligature, under the artery, from without inwards, taking care not to include the pneumogastric nerve.

During the different steps of the operation much difficulty was encountered by the deep position of the artery. The hemorrhage was exceedingly profuse, showing that the smaller vessels ramifying through the hypertrophied structure were unusually active, enlarged, and numerous. These, however, were readily secured. The ligature came away from the main artery on the 28th day.

The operation was followed in a few minutes by a perceptible and general shrinking of the enlarged structures, and a diminution of the density of the mass; the colour became less deep, and the temperature was considerably lower. In two weeks the change became so great that the patient could see and hear; the eyelids were less tense, and a part of the globe of the eye could be seen. The wall of the obstructed *meatus auditorius externus* had shrunk, and again become tubular and permeable, so as to admit the undulations of air upon the tympanum; finally the general sensibility had become more natural. Although the ligature came away on the twenty-eighth day, the patient was not allowed to leave her bed until the thirty-first day, after which she was permitted to sit up and walk about.

Some three months after the ligature had been placed upon the artery, the shrinking of the mass became stationary, and there was a slight extension of discoloration or encroachment upon the sound tissues from some portions of the margin.

In June, 1859 (six months after the operation), the patient again paid me a visit. The process of diminution of the disease being now apparently passive, I thought it expedient to tie the common carotid trunk on the other side. This was done on the 14th of June, and the ligature separated again on the twenty-eighth day. The operation was accomplished with less difficulty than on the previous occasion, on account of the tissues on the left side being less hypertrophied, and of the artery not being so deeply covered. The effect of the second ligature was followed by the same general phenomena as were observed after the first. The tumefied parts shrunk farther, the colour became paler, and the temperature depressed.

Four months after this, October, 1859, the patient called upon me. Her general health was improved, and the tissues of the face were getting more mobile. At this visit I injected, with one of Pravaz's syringes, about fifteen drops of the solution of per-chloride of iron into the still enlarged tragus of the ear. The fluid entered the tissues freely, causing pain, discoloration, and hardening of the part. An eschar was formed, which was soon thrown off, leaving a healthy granulating surface, which healed well. The enlargement was diminished, and the appearance improved by this procedure.

In October, 1860, the curative process was apparently stationary or passive. The mammillated tubercles on the back of the neck had now become shrivelled and scarcely perceptible, leaving a surface somewhat softer and but slightly wrinkled or discoloured. Partly from the shrinking of the surrounding tissues, and partly from increased growth, several nipple-like tubercles on the lower portion of the cheek on the right side, had assumed the shape and size of a hen's egg. A strong double ligature was passed through this part of the cheek, with the intention of strangulating the projection at its base. This was partially effected in about a week, and the remaining pedicle was divided by the knife. A large granulating surface was thus left which healed readily, leaving a white solid cicatrix on the natural level of the cheek.

Saw the patient again in June, 1861. During the interval, since her last visit (October, 1859), her general condition had been good. The organs of the external senses were resuming their functions more naturally. A portion of the mass, about three inches long and two wide, situated under the jaw, and extending backwards towards the angle, although much contracted, still was slow in decreasing in size. This was removed by excision to the natural level. The exsected part proved to be very vascular and spongy, resembling the erectile tissue of aneurism by anastomosis. The wound was dressed to heal by second intention, and cicatrized healthily in six or seven weeks. In September following, a small portion of the lobule of the right ear was removed, which also cicatrized without difficulty. In May, 1862, Mrs. B. came again to the city for consultation, on account of an attack of acute conjunctivitis of both eyes. She soon recovered from this attack, and returned home. She was not put under any medicinal treatment, as the general health was good, and the curative process of diminution was progressing favourably and gradually.

From May, 1862, until November, 1865, the patient continued in good condition. In general, the skin of the face, head, and neck, during this interval, became softer, and the sensibility of the surface more normal; a part of the end of the nose and of the upper lip puffed up and enlarged. Free scarifications were used, which were followed by profuse flow of blood and serum. The incisions healed kindly, with contraction of the parts and marked improvement in appearance.

Towards January, 1866, an elevation made its appearance again on the upper lip. This was excised, and the parts returned to their more natural proportions. Nine months after this, a puffy, mammillated eminence sprung from the tip of the nose larger than an almond. This was excised from the cartilage, and the lips of the cut partly approximated by two metallic sutures. The cicatrization went on favourably, leaving the end of the nose but little disfigured.

December, 1866.—About eight years have now elapsed since the first ligature was applied upon the trunk of the common carotid. With the exception of occasional indisposition, generally arising from the effects of cold, Mrs. B. has enjoyed a very tolerable condition of health. At present all the functions are well performed physically and mentally. She is in good spirits, and is a useful person in the household of which she is a member.

The vision is good; the eyelids are free and open, and are under the control of the orbicularis and levator palpebrarum; the hearing is acute, the *meatus auditorius externus* being perfectly free and open. The senses of smell and of taste are now perfect. The general sensibility, dull and obscure before the ligature of the carotids, is now normal, and, as the patient expresses it, the surface feels to her like the natural flesh. The feeling of excessive heat in the parts has also subsided. The colour of the skin is much less deep. The general shrinking of the mass following the ligature upon the carotids has changed the hideous and bulky deformity into a physiognomy of much less and disfiguring proportions. [*Vide* Pl. II.]

Mrs. B. now sleeps in bed with complete comfort, which she was before prevented from doing by the bulkiness of the disease in the region of the neck. She can now move her eyelids, masticate freely, and rotate the head upon the neck, without impediment.

The nasal and buccal cavities are healthy. Occasionally tubercular elevations have arisen from the tissues originally the seat of disease, before the operations. These have been amenable to excision and injections, which have been followed by healthy cicatrization.

There is at present no disposition in the disease to extend, but, on the contrary, a marked tendency toward further progressive diminution and shrinking in those parts where the level of the original surface is not attained.

The portions of the diseased mass which were excised, exhibited pathological changes of a marked character, as was at first diagnosticated. The tissues principally involved in the disease were the dermoid, the subcutaneous adipo-cellular layer, and the vascular. On the face, where the tubercular character of the disease was most manifest, the skin was covered with cuticle in the form of slight squamæ, under which the corion assumed a reddish tint. Numerous white specks were disseminated over the irregular surface, and these appeared to be the augmented secretion from the enlarged sebaceous follicles. The dermoid tissue proper was not much thickened on the nipple-like projections; the subcutaneous layer of cellular tissue was hypertrophied, and the mesh-work expanded and infiltrated with oily serum and lymph; the vascular tissues, arteries, and veins, ramifying through this morbid structure, were abnormally developed and active; finally, the tubercular elevations were formed principally from the adipo-cellular layer thus transformed.

The portion of the diseased structure excised from the neck under the jaw, was entirely different in character. The surface here was leaden, scaly, rough, and hard, and the skin thickened as in elephantiasis arabum. The cellular tissue was much hypertrophied, dense, infiltrated, and vascular. In some parts the arteries and veins were so developed as to assume the character of what is termed by Cruveilhier accidental erectile tissue—"*tissu erectile accidentel.*" The microscope revealed nothing of importance.

The functions of the brain are performed as well as at any period of her life. The memory is not in the slightest degree impaired, and the other faculties of the mind are equally undisturbed. In fact, there has been no alteration mentally from the operations on the common carotids.

New York, March 2d, 1867.

Art. XII.—*Successful Removal of a Fibro-plastic Tumour from the Body of the Right Vocal Cord, with the Aid of the Laryngoscope.* By Henry K. Oliver, M. D., Boston.

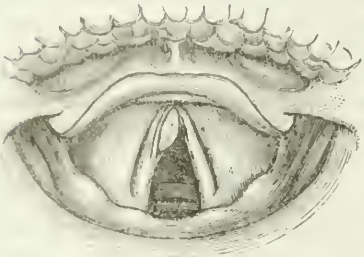
Mr. H., an intelligent mechanic, and an amateur singer, aged forty-six years, came to me on the 25th of May, 1866, on account of an obscure affection of the larynx. He was accompanied by his physician, Dr. Geo. B. Coggswell, of North Easton, Mass. The history of his case is as follows:—

Mr. H. had always enjoyed good general health, and, previous to the existing difficulty, had never had any trouble with his throat worth mentioning. Some time in the spring of 1865, he noticed a slight hoarseness in singing—affecting particularly the upper notes—which at times was scarcely perceptible. This hoarseness gradually increased, until, in the early part of August, the natural voice disappeared, and a high unnatural tone took its place, and had continued. There had been no soreness or pain in the larynx, no difficulty of breathing or of swallowing, and his previous good general health had continued. Since the commencement of the difficulty he had been under medical treatment, but had never been examined with the laryngoscope. Careful inquiry removed all suspicion of the existence of syphilis.

On making pressure over the larynx, neither pain nor soreness was experienced, nor was anything abnormal seen in the fauces. In speaking, the tone was of a high, weak, falsetto character, and every effort to produce the natural voice was unavailing.

On examination with the laryngoscope, a tumour was seen upon the right vocal cord, occupying, by a broad base, quite one-third of its length, commencing well up to its anterior origin. In size and shape the growth resembled the third part of a very large pea, flattened from above downwards. Its colour was pinkish-white, and its surface somewhat irregular, but smooth and shining. A more careful examination of its base showed that the growth had its origin in the deeper tissue of the cord, the superior surface of which bulged considerably upwards. From the amount of this distortion, I judged that more than one-half the length of the cord was implicated. The tumour, in its development, seemed to have forced its way through immediately below the free edge of the cord which ran, in a thin lip, over its upper surface.

Fig. 1.



The annexed engraving, Fig. 1, is a faithful representation of the neoplasm as it appeared at the first examination.

On an attempt at phonation, both vocal cords moved, with equal promptness, to the middle line, and the arytænoid cartilages came into close apposition. When the glottis was closed, the tumour pressed into the left cord just below its free edge, which was drawn up over the surface of the growth to a considerable extent. A similar, though much more limited movement of the free edge of the affected cord was also observed, so that a large part of the tumour was concealed from view. The only aperture available in phonation was, therefore, a short narrow opening extending from the posterior surface of the tumour to the vocal processes; as the cartilaginous glottis was manifestly closed.

Attention being subsequently directed to that portion of the sound cord which, in the closure of the glottis, met the apex of the tumour, it was observed that a permanent indentation existed there. This indentation will be found represented in the engraving.

Besides the neoplasm, nothing abnormal was noticed in the larynx, excepting a slightly congested appearance of the affected cord.

At this first examination the growth was shown to Dr. Coggswell, and to Dr. R. M. Hodges, also, who happened then to call at my office.

With regard to the nature of the growth, judging from its external characteristics and its deep origin, it was, apparently, fibroid, but of this I could not feel, at the moment, quite confident.

It will be seen that, in this case, I had to do with a neoplasm which presented unusual obstacles to a successful extirpation. Success, in the broadest sense of that word, in the removal of sessile growths upon the voca cords, is by no means easy of attainment; for it must be borne in mind that the inviolability of the cords, upon which depends the restoration of the voice, is second only in importance to the removal of the tumour. In this case, however, there was not merely a broad-based growth, but the base was buried in the substance of the cord, and, moreover, its seat was in the anterior portion of the cord, where, on account of the epiglottis, manipulation in the larynx is often so difficult. On the other hand, I had in my favour a throat which bore the presence of the laryngoscope well, and was of good capacity; an epiglottis which was in a sufficiently upright position, and, what was of no less moment, a willing and an intelligent patient.

As to any decision upon the method of operating, that was, for the time being, held in abeyance until I had become satisfied as to the density of the neoplasm. I therefore contented myself, at the first visit, with endeavouring to determine the length which it would be necessary to give the descending branch of whatever instrument I should employ, and the angle which it should make with the horizontal branch. For this purpose, I passed the ordinary laryngeal silver probe, at various angles and lengths, into the larynx, until I had determined the points desired, and, as proof that the measurements were correct, I melted a small bead of nitrate of silver upon the extremity of the probe, and touched the upper surface of the tumour lightly, leaving a white mark upon it.

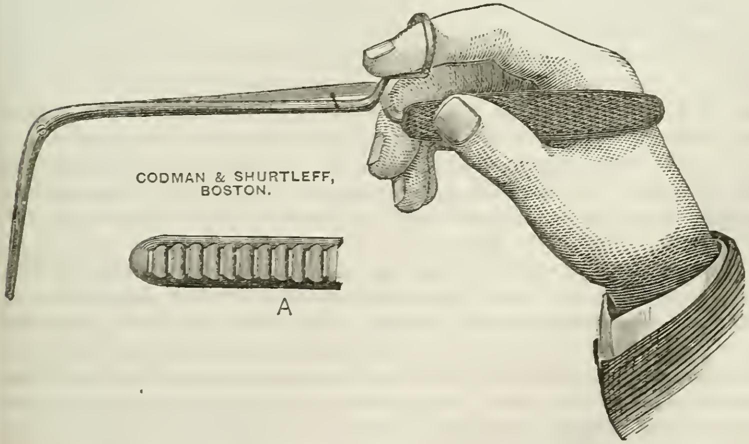
Pending further proceedings, I dispatched the patient to his home, with instructions to pass a curved bougie down towards the opening of the larynx, several times a day.

Thinking that, whatever consistence the growth might prove to possess, I might be able to crush its free portion, and possibly break up its attachment, with forceps of suitable construction, I had such an instrument made, nothing that I possessed seeming likely to answer the purpose.[1] With

---

[1] I annex an engraving, Fig. 2, and a short description of this instrument. It was manufactured by Messrs. Codman and Shurtleff, of Boston, according to a design

Fig. 2.



furnished by me. I am only persuaded to add to the already large list of laryngeal instruments, because several laryngoscopists have voluntarily expressed a this forceps I endeavored, on June 3d, to grasp the tumour, but the space between it and the anterior angle of the cords was not sufficient to allow the blade of the forceps to be inserted, and the attempt was abandoned. I then decided to destroy the growth by caustics. Previously, however, I made a thorough tactile examination of the tumour, in order to determine its consistency, employing again the silver probe, with which I touched every part of its visible surface. The result convinced me that the growth was exceedingly dense in structure. I could not, indeed, produce any impression upon it, the probe glancing off when firm pressure was made. I convinced myself, however, of one fact which promised to aid me materially in the treatment, which was, that pressure upon the tumour itself was well tolerated, provided that no part of the instrument came into contact with the epiglottis, or with the walls of the larynx.

On the 9th of June, I made the first application of caustic, employing the solid nitrate of silver.[1] The point chosen was the centre of the tumour, as near to the edge of the vocal cord as I deemed prudent. My plan was to eat out, by means of the caustic, a cavity in the central portion of the growth, into which I should be able to introduce, safely, a sufficient quantity of caustic to destroy the base, the destruction of which would, of course, imply that of the free portion of the growth.

---

favourable opinion of this pattern. It is only intended for the crushing of large, or medium-sized growths situated upon the border of the vocal cords, or such as, growing from the ventricles of the larynx, or from the ventricular bands, project towards the median line of the glottis. Ordinarily, in the attempt to seize a tumour, whether successful or not, the closure of the larynx follows, and compels the withdrawal of the instrument. The forceps I have designed, is intended for use when the glottis is closed, so that what is generally considered an accident, (to be, if possible, avoided), is, with this instrument, a thing to be encouraged.

As will be seen by reference to the engraving, the instrument is, essentially, an ordinary laryngeal forceps, opening antero-posteriorly. The blades are, however, longer and narrower, and have a considerable bevel on the toothed edges (see portion of blade enlarged at A), so that in the closure of the blades between two opposing surfaces, like the vocal cords in their approximation, these surfaces are in no danger of being implicated, while the force is exerted upon any growth, which, in the closure of the larynx, is thrust between the blades. Cases will doubtless occur, now and then, in which, from an unusually sensitive condition of the larynx, the operator will find it difficult to seize a growth upon the border of the vocal cords, or of the ventricular bands, by means of forceps with short blades. In such cases, the instrument described will, I am confident, serve a useful purpose. The mechanism of the handle is recommended as preferable to the ordinary handles, with rings for finger and thumb, the use of which requires the elbow to be raised to a degree both awkward and uncomfortable.

[1] The porte-caustique which I commonly use is the ordinary silver bulb-pointed laryngeal probe, which is, by many operators, esteemed more highly than any other. My instrument is made of rather stouter wire than usual, and with a correspondingly larger bulb, which, instead of being solid, is hollowed out with a cup-like cavity, the mouth of which is of a diameter somewhat less than the external diameter of the bulb. At the fundus of the cavity two fine holes pass obliquely to the exterior. In the use of the nitrate of silver, a small bead of the salt is melted over the mouth of the cavity. When any other caustic is employed,

On the 13th, no effect of the nitrate of silver being noticed, I charged the porte-caustique with Vienna paste, by sprinkling the powder over the moistened surface of the sponge, and this I applied to the tumour at the point before mentioned, keeping it in contact with the surface as long as was possible. This application of the paste I repeated semi-weekly (with the exception of an occasional use of the nitrate of silver), until July 30, the only effect being to produce a slightly worm-eaten appearance at the part touched; while the main portion, manifestly stimulated by the caustic, had taken on an increased growth, and that to such a degree as to separate the cords perceptibly, so that the patient could not speak even in the former high tone, but only in whisper. The failure to produce any considerable effect upon the tumour arose from the fact, that on no occasion was I able to make anything more than a superficial application of the caustic, inasmuch as any firm pressure upon the surface of the tumour was prevented by its hard and smooth character. Attempts to make the desired amount of pressure were invariably followed by the glancing off of the instrument. I had persisted in the applications under the constant hope and belief that each one would be followed by some perceptible effect, and because I preferred to be over-cautious, on account of the danger there seemed to be of injury to the vocal cord by a free use of the caustic.

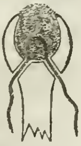
In anticipation of the failure of the caustic to accomplish, unaided, the destruction of the neoplasm, I had provided myself with an uncovered, double-edged, and sharp-pointed laryngeal knife, having a slender but strong stock, and with the length of the descending branch and its angle of curvature suited to this particular case.[1]

With this knife, therefore, on July 30, I made a superficial incision into the tumour, from front to back, parallel with the cord, and as near as possible to its edge. It cut like a dense fibroid mass; some blood followed the cutting, and some pain was complained of. After the withdrawal of the knife, I rubbed solid nitrate of silver into the incision.

On the 4th of August, there was a gangrenous appearance in the line of the incision of July 30, but the destructive effect was quite limited. I therefore made several gashes in the same line, and applied a solution of caustic potash of moderate strength. As the incised wound was narrow, I laid aside the porte-caustique which I had been employing, and used, on this and on all subsequent occasions, a simple silver wire, without the bulbous extremity. To the extremity of this I attached, firmly, a bit of

a bit of sponge is strung upon a piece of silk thread, the extremities of which are passed through the openings in the fundus of the cavity. The sponge is then to be pulled into the cavity, and, after the ends of the thread are securely tied exteriorly, is to be trimmed so as to project but slightly.

Fig. 3.



The annexed cut, Fig. 3, represents an enlarged section of the extremity of this instrument.

With this contrivance, any caustic, either in powder, or in solution, is easily and safely conveyed to the larynx. The excess of the external diameter of the bulb over the diameter of the mouth of the cavity affords, practically, to the laryngeal walls, sufficient protection from the caustic, both in the passage of the instrument into the larynx, and in its withdrawal after cauterization.

[1] This angle was 95°, and the length of the descending branch, from a line continuous with the horizontal branch, 3¼ inches to the point of the knife.

sponge. I had no hesitation in employing the caustic uncovered, as I had little difficulty in conveying the probe into the larynx, and I designed exhausting the sponge of the caustic in the wound.

The incising and the application caused considerable pain, which shot up into the right ear, and occasionally into the left, so that the patient could not resist thrusting his finger firmly into each meatus. There had been the same shooting of pain to the ear at the previous use of the lancet, and on one or two occasions also when the caustic was used without the lancet.[1]

Desiring to follow up the operations of the 4th, I advised the patient to remain in the city for a day or two; and, on the 5th, I made another deeper series of gashes, and applied again the solution of potash. The operation of the preceding day had given a dark, pulpy look to the line of the incisions. The patient reported that the bleeding from the wound had continued a number of hours after leaving my office.

On the 6th, I repeated the incisions, and applied strong nitric acid. Moderate spasm followed the application. The patient then returned to his home, reporting to me again on the 10th. On examination there was a decided boggy furrow where the incisions had been made, while, from its posterior extremity, small gangrenous shreds were seen hanging down. The greater part of the surface of the growth had also a grayish look. At this date I made additional incisions, turning the instrument, as much as was possible, so as to cut into the base of the tumour, and applied nitric acid.

On the 13th, the furrow was considerably wider and deeper, but the base did not appear to yield, and I therefore at this date, and again on the 17th, cut still deeper into the growth, hacking the base as well as I could, and applied, on each occasion, a stronger solution of potash than I had before used.

On the 20th, Mr. H. reported himself, speaking in a natural tone of voice for the first time in twelve months. The voice was, however, of only moderate strength. On examining the larynx, I found that the tumour was separated from its base for the greater part of its length, and was attached to its anterior portion by a short pedicle. The body of the growth was ragged and gangrenous, and had a greater vertical diameter than I had expected. In phonation the polyp was lifted up above the level of the cords by their approximation. The restoration of the voice was therefore easily accounted for. At this visit, after scarifying the base of the growth, I applied the solution of potash.

On the 24th, while scarifying in the vicinity of the attachment of the polyp, the patient gagged, and immediately afterwards complained of some obstruction in the larynx. On examination I found that the polyp had been separated from its attachment, but was not to be seen; and although I made as thorough a search as was practicable with the patient's uncontrollable efforts to relieve himself therefrom, I was unsuccessful in determining its locality. Finally, the polyp not coming to light, I instructed him to lie upon the couch, with his head and chest hanging over the edge, and to cough with some force. After two or three efforts, he spat the polyp into his hand. Immediate relief followed its expulsion, and, after a few moments' rest, I applied nitric acid to the base of the growth.

---

[1] The nerve involved in the acknowledged sympathetic connection between the auditory canal and the larynx, is, according to Romberg and Toynbee, the auricular branch of the vagus. Dr. C. B. Fox, however (London Lancet, April 28, 1866), thinks that this branch of the vagus is not distributed to the meatus, but to the posterior part of the pinna, and that the nerves really concerned are the branches of the auriculo-temporal of the fifth cranial nerve, on the one hand, and the vagus on the other, the deep origin of the sensitive root of the former being in close proximity to the deep origin of the vagus in the floor of the fourth ventricle.

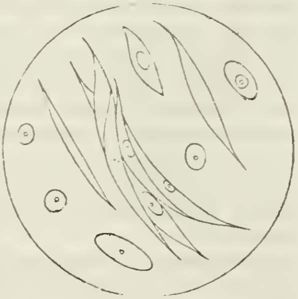
I can give no information with regard to the place of lodgement of the polyp. I feel quite positive, however, from the character of the patient's efforts to expel it, that it was lodged either in the larynx itself, or in the air-passages below.

The polyp, after having been some months in alcohol, is of a flattened oval form, being four lines in length, three lines in breadth, and two lines in thickness. Dr. Calvin Ellis, to whom I submitted it for examination immediately after its removal, favoured me, shortly after, with the following report:—

"The small growth removed from the larynx of Mr. H. was of considerable consistence, and only with difficulty divided by the dissecting needle, or crushed. A microscopic examination showed some fibres, and many nuclei and cells described as fibro-plastic."

The annexed engraving, Fig. 4, is copied from a drawing by Dr. Ellis, of the microscopic appearances.

Fig. 4.



x 382.

On the 27th, I found the sound vocal cord considerably inflamed, from the application made on the 24th, the removal of the polyp permitting this cord to come into contact with the caustic upon the base of the growth. On account of this inflammation no application was made at this visit.

On the 31st the inflammatory condition had disappeared. The base of the growth had a gangrenous appearance, but I could not satisfy myself that the treatment had, latterly, induced more than a superficial destruction. In fact, the main body seemed to have increased in bulk. After scarification, therefore, I applied the acid nitrate of mercury. The application caused considerable smarting, more so than any of the former caustics, but the spasm was slight and came on gradually.

On September 3d, the patient announced that the application at the previous visit, although causing, as above reported, very little spasm at the time, induced quite a severe one half an hour after leaving my office. An examination of the larynx revealed the unpleasant fact that the tumour was starting out again in spite of the treatment. I however scarified, and applied nitric acid.

At his next visit, on the 7th, the patient again spoke in the original high tone of voice. He could, however, speak in the natural voice by choosing a very low pitch. I now found that the tumour was nearly as large as when I first saw it. In fact, the portion in the cord was considerably more bulky than at first. Its growth had been surprisingly rapid during the previous seven days. In the closure of the glottis the apex was buried in the opposite cord, as before, though not so deeply, so that in a forced attempt to produce a low tone, the cord, in vibrating, swung clear of the growth.

The condition of things was certainly not encouraging, for it was evident that a much more energetic method of treatment, which, of course, implied a greater risk to the integrity of the cord, must be substituted for the cautious method I had adopted. The latter had been successful in the removal of the free portion of the tumour, but had not made headway against the growth of the buried portion, stimulated as it had been by the action of the knife and the caustic.[1]

I therefore, at this visit, prepared to make the attempt to destroy the growth at a blow. With this design I made incisions into the tumour close to the edge of the cord, as at previous operations, but much deeper, so that the wound gaped perceptibly; and then rubbed in a saturated solution of chromic acid, having also on the sponge a small quantity of the acid in powder. I made an attempt also to insert the lancet into the buried portion of the tumour at some little distance from the edge of the cord, for the purpose of determining the possibility of safely introducing there a small quantity of caustic. But I found it impossible to insert the point without the exercise of more force than I deemed prudent. Pretty severe pain accompanied the incising, shooting up into the ears as before described. There was, however, less smarting from the caustic, and no spasm at the time.

On the 10th, the patient made his appearance, speaking again in the natural tone of voice. He reported having had a pretty severe spasm in the ears, three-quarters of an hour after leaving me. There had been also a good deal of soreness in the larynx since the last operation. An examination showed that the upper half of the free portion of the tumour had been destroyed; but the destructive effect of the acid, even upon the free portion, was not as great as I had hoped for and expected, while the base was comparatively unharmed. Approximation of the cords was, however, seen to be possible, and the vibrations of the sound cord were only to a limited degree interfered with by the undestroyed portion of the growth beneath it.[2]

The failure of the chromic acid to destroy the growth left me somewhat at a loss what caustic next to select. That class of caustics the action of which upon the living tissues is limited, had been faithfully tried. Even potash, a substance the effect of which it is notoriously difficult to limit, had, in solution, failed seriously to affect the neoplasm; so that I was finally convinced that the entire removal of the tumour could not be accomplished without taking a risk of injury to the cord.

---

[1] Cauterization in the larynx is accomplished at a manifest disadvantage, on account of the sensitiveness and mobility of the parts; and on account, also, of the fact that the quantity of caustic employed must be limited. It is, therefore, not to be wondered at, that in such neoplasms in this organ as can, from their locality, or other causes, only be cauterized in a superficial manner, an increase, rather than a decrease of their tissue is observed, such being a common result of superficial cauterization of morbid growths in other parts of the body.

[2] It is well known to observers on the physiology of the larynx that the cords arch upwards in phonation. This fact will explain the possibility of vibratory action in this instance.

I then selected caustic potash in powder as the substance to be next employed, hoping, by the exercise of special care, to confine its action to the limits of the morbid growth.

Having, therefore, laid open the wound of the last operation, and added fresh incisions so that it gaped more widely than ever, I rolled the extremity of the moistened sponge in freshly-powdered caustic potash, and, conveying it to the tumour, rubbed it with extreme care into the wound; and the same operation I repeated with fresh caustic. There was no spasm, and the patient left soon after for his home.

On the 17th, the date of his next visit, Mr. H.'s voice was still further improved, a fact that relieved me of a good measure of the anxiety I had had concerning the probable effect of the potash. He reported that he had had much soreness in the larynx, and that the breath had been quite offensive. He had also spat up, on the 13th, two or three bits of what seemed to be "dead flesh," which tasted offensively. On examination, I found, to my delight, that the entire growth appeared to have been destroyed, and that the vocal cord was quite uninjured. The free portion was certainly swept away, and a considerable excavation in the cord, where the base of the growth had existed, led me to hope that that portion also had at last yielded. Whether this were really so or not, I could not yet determine with certainty, as the cavity was lined with a greenish looking layer. There were, moreover, to be noticed, upon the inferior edge of the cavity, two small nodules which seemed to be remnants of the neoplasm. The breath was still somewhat offensive, and as the completeness of the destruction could not be determined with certainty until the cavity was cleared of its gangrenous layer, the patient returned home. As for the nodules, if they were portions of the original tumour, they were evidently isolated, and, separated thus from the support of the main growth, I hoped for their gradual disappearance.

On the 27th, the patient visited me again, when the edges of the cavity appeared to be contracting, though its gangrenous look had not yet disappeared.

After this date I saw him only occasionally, nothing being done except to watch the progress of the case. The result was that the cavity became healthy looking, gradually filled up and contracted, and the nodules diminished in size. The voice became stronger, so that on his visit to me on the 17th of November, he reported that he had been able to resume his duties in the church choir.

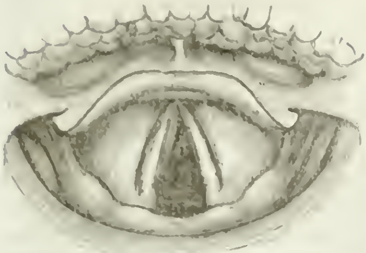
My last examination of the larynx was on March 23, 1867, six and a half months after the final operation, at which date also I presented the patient to the notice of the Suffolk District Medical Society, at their monthly meeting, and read a report of the case.[1] At this examination the cicatrix presented the form of an elongated ellipse, somewhat depressed below the level of the border of the cord, the sides being formed by the lips which originally passed above and below it, their outlines being still visible. The right cord was, throughout its entire length, somewhat thickened, and the colour was slightly deeper than normal. The nodules had, apparently, quite disappeared.

---

[1] In a letter received from Mr. H., dated May 16, 1867, eight months after the final operation, he says, "My voice remains as good as when you last saw me, and, I think, is even a little better."

The annexed engraving, Fig. 5, gives a good representation of the appearances just described.

Fig. 5.



In the approximation of the cords, the cicatrix was seen to be quite pliable, so that in the production of the lower tones the internal border of the right cord preserved a regular outline. When, on the other hand, the tension of the cords was increased in the production of the higher tones, the border was, at the locality of the cicatrix, somewhat, though slightly, irregular. Either, however, from the presence of the cicatrix, or from the hypertrophied condition of the cord, its vibratory action was materially embarrassed, and, indeed, I was inclined to doubt if there were any such action at all, at least in the middle and upper tones.

The voice in speaking was very good, and it is doubtful if any one would have suspected that it had ever been seriously affected. Indeed Mr. H. affirmed that his own family found only a slight change from his former voice. In singing, also, he stated that he found the change to be not a very great one, except that there was some loss of power, and that the higher tones were rather hard and unsympathetic, so that he thought he should be obliged to discontinue the use of his tenor voice, and substitute baritone.

The result of this case can be justly considered satisfactory, when the circumstances of the nature of the growth, its locality, and its deep origin are taken into account. I am aware that the time occupied in the removal of the neoplasm might have been shortened; but, on account of its position in the cord, and my doubts as to its probable capacity of resistance to caustic action, I chose to err on the safe side, rather than risk, unnecessarily, the safety of the cord. Expenditure of time, in such cases, is matter of little moment compared with restoration of the vocal functions. The time might have been shortened had the patient been able to remain in the city, or to have visited me more frequently.

The chief points of interest in this case are the following:—

1. The nature of the neoplasm, which, according to Dr. Ellis, was fibroplastic, a species of growth quite rare in the larynx.

2. Its deep origin. This circumstance is also rare. The ordinary fibrous polypi in the larynx take their rise, for the most part, in the submucous areolar tissue. That the growth in this case had a deeper source was apparent at the first, from the laryngoscopal appearances alone. This would seem to have received confirmation subsequently by the examination, on the 7th of September, with the point of the lancet at some distance from the free edge of the cord, and from the depth of the cavity observed after the application of the caustic which insured the destruction of the neoplasm, although it is, of course, possible that the healthy tissues may have been implicated to a limited degree in the destructive effect. What

the tissue was which was the seat of the growth, it is not possible to say with certainty. It may have been the fibrous portion of the vocal cord (*membrana vocalis*); but my belief is, that it had a still deeper source, namely, in the vocal muscle itself (the horizontal fibres of the thyro-arytænoid muscle).[1]

3. Its power of resistance to the action of caustics. This seemed to me to be quite remarkable. It was not to be wondered at that its tissue did not give way under the earlier applications, unaided by the knife; but that it should not only resist, stubbornly, the combined agencies of the knife and the stronger acids, &c., but should even increase rapidly during their employment, is certainly noticeable. The superficial cauterization of morbid growths often induces, as has already been said, their more rapid development; at the same time, I cannot but think that none of the ordinary neoplasms of the larynx would so obstinately have resisted treatment.

4. The fact that, notwithstanding the unyielding character of the neoplasm, its substance finally gave way without, as far as is known, any of the surrounding healthy tissues being implicated in the destructive action. This was, perhaps, partly owing to my care in depositing the powdered potash.

With regard to the possibility of the recurrence of this tumour, there is, undoubtedly, some reason for apprehension; such being the tendency often manifested by growths described as fibro-plastic—or sarcomatous of some pathologists—in other parts of the body. The ordinary fibrous polypi of the larynx show no tendency to recur.

The means of illumination employed throughout the case was reflected artificial light, from an argand gas-burner, furnished with a single lens-light concentrator. Other accessories, such as head-rest, &c., were not used. The patient sat in an ordinary chair, holding the protruded tongue with the fingers of the right hand. I had at no time any other assistance in operating. The daily use of the bougie by the patient himself, for the purpose of diminishing the sensibility of the larynx, was continued throughout the treatment. Insensibility, however, was never attained to such a degree as to permit contact of the instruments with the epiglottis, or the sides of the larynx, without inducing closure of the organ.

It is happily no longer necessary, as formerly, to substantiate the fact of the presence of a neoplasm in the larynx in any particular instance, and of its actual removal by operative means through the natural passages; but, in passing, I may remark that, in addition to Drs. Coggswell and Hodges, the larynx was exhibited, at various stages of the treatment, to Drs. Warren, Cabot, Bowditch and Langmaid.

---

[1] "Sarcomatous tumours affect the areolar tissues, the fibrous membranes—especially the submucous—the muscles, inter-muscular tissue, * * *."—Rokitansky.

In conclusion, it may not be out of place, on account of their interest in a physiological point of view, to call to mind some of the vocal phenomena which manifested themselves, from time to time, in the progress of the case.

The loss of the natural voice was owing, of course, to a purely mechanical cause. The vibratory action of one cord was prevented by the tumour, and that of the other by the pressure of the apex of the tumour acting thereon like a damper. When the tumour was converted into a polyp, the impediment to the vibration of the left cord was removed, and, although the base of the growth still remained as an obstruction to the normal action of the right cord, the voice was nevertheless restored.[1]

At the commencement of the reproduction of the tumour, subsequent to the removal of the polyp, it was noticed that the higher tones of the scale were lost, while the lower were still available. Even when the tumour had acquired almost its original dimensions, it was possible for the patient to produce a low tone. These results were owing, as the laryngeal mirror showed, to the fact that the vocal cords were less tense in the production of the low, than in that of the high tones. In the former case, therefore, the vibrations had a more extensive sphere, and a greater arching upwards, so that, the affecting cord remaining motionless, the vibrating cord escaped contact with the growth.

I may again call to mind the restoration of the natural voice after the destruction, by chromic acid, of the superior portion of the tumour, a result only to be explained by the fact of the upward arching of the cords in phonic action.

In the production of the higher tones, on the other hand, the tension of the cords was greater, the glottis narrower, and the left cord came into intimate contact with the tumour, so that its vibratory power was completely annulled.

It should be remarked here that the tones of the voice, as thus restored from time to time during treatment, were of moderate force only, like those of the ordinary voice in speaking. In such tones it is acknowledged that the form of the glottis is slightly elliptical, and that its perfect closure need not and does not take place during vibratory action. In the powerful tones of the chest voice, on the contrary, the glottis is rectilinear in shape, and perfect momentary closure takes place.

With regard to the phenomena exhibited in the falsetto register, several interesting points may be mentioned

It is universally acknowledged that in the production of this voice, only the thin edges of the cords are concerned, the vibrations being exceedingly minute. It is also pretty well agreed that the glottic aperture is wider in the production of the falsetto, than in the production of the full chest tones. There is not, however, a unity of opinion as to the relative length of the glottic aperture in the falsetto and in the chest registers.

---

[1] Müller's experiments on the dead larynx show that it is possible for sound to be produced when one cord only vibrates, as in the case of unequal tension of the cords when a moderate force of the current of air is employed.

Without designing to enter upon the discussion of this mooted point, I desire to call to mind that, in this case, it is impossible that the glottis could have had a length greater than the distance from the posterior surface of the neoplasm to the vocal processes. The cartilaginous glottis was evidently closed, and, moreover, the sides of this portion of the glottic opening contain no vibrating element. Now, according to Mr. H.'s statement, his falsetto voice, before the affection of the larynx, was unusually deficient both in range and in musical quality. During the existence, however, of the morbid growth, I can bear witness to its good range and its good quality, the latter being quite noticeable. On the restoration of the natural voice, following the extirpation of the polyp, this quality of his falsetto was lost. Since the complete extirpation of the growth, also, the falsetto is inferior in all respects: but according to his own testimony, it is nearly, or quite as good as it ever had been.

Art. XIII.—*Case of Gunshot Wound of the Knee-Joint; Removal of the Ball from the Articulation; and Recovery.* By Walter F. Atlee, M. D., of Philadelphia.

John Devenny, aged eighteen years, residing in 24th Street, below Naudain, was shot by a pistol-ball in front of the left knee, on the 26th of October last. The pistol was fired from a distance of a few feet, and in a direction downwards. He walked immediately after the injury to his residence, a distance of about half a mile.

When I first saw him, at 2 o'clock, about two hours after the receipt of the wound, he was seated in a chair, the limb extended, and suffering intense pain in the articulation. He was placed in bed, the clothing removed, and the parts examined. The ball was found to have struck immediately below the centre of the lower edge of the patella; there was no wound of exit, and by a slight introduction of the probe I satisfied myself that the ball had entered and had passed beneath the ligament of the patella. The patient was put to bed, the wounded limb was kept as motionless as possible; water-dressings were applied over the knee, and morphia administered in large quantities. In the evening the joint was greatly swollen, the pain was increased, and the general symptoms were very severe.

The rule laid down by all authorities in such an injury, is never to seek to extract the ball unless it shows itself, so to speak, of its own accord. In this case, the severity and rapid development of the local and constitutional symptoms were such that it must terminate fatally, or at best, in the loss of the limb above the joint, by amputation, if they did not speedily subside. It was determined, therefore, provided they continued, to endeavour the following day—before any *secondary* symptoms, local or general, could occur—to find the ball, and extract it. Besides, my own experience had shown me that the use of Nélaton's probe in finding leaden balls, and the use of chloroform in tranquillizing the patient, enabled many things to be accomplished, which had before been impossible, and I thought myself justified, under the circumstances, in hunting for the ball in this knee.

The next morning the patient being worse, he was, without any more delay, placed under the influence of chloroform, and the search for the ball was proceeded with. The limb was placed in the position it occupied when struck, and Nélaton's probe was passed into the wound in the direction said to have been taken by the ball. It passed in a direction somewhat downwards and outwards, immediately below the middle of the lower edge of the patella, through the ligament, and at a distance of two and five-twelfth inches came in contact with the ball, firmly lodged in the articulating surface of the tibia. It could be felt by means of the probe to be there buried to the depth of more than half its diameter. After prolonged efforts at seizure—they lasted nearly an hour—with a pair of unyielding dressing forceps, it was extracted. The appearance of the ball showed that by repeated pinches on the top, a part had been *pinched up*, so to speak, and thus finally a sufficient hold afforded to the instrument to drag it out.

After the removal of the ball the limb was kept quiet by means of splints and sand-bags; water-dressings were applied to the knee, and morphia was given as called for by the pain. On the 13th of November, the splints being still kept in place, the patient was allowed to sit up in a chair; on the 25th he went down stairs; and on the 26th, by the assistance of crutches, he walked three squares. On the 12th of December the splint was removed.

After the operation nothing came out from the joint, unless it be some few drops of synovia which seemed to be present one day upon the lint used in the water-dressing. The ball weighed a few grains less than one drachm.

The patient walks now (March 18th) quite well, aided by a cane. The joint is somewhat larger than that on the right side, and does not move more than about twenty degrees. This stiffness, naturally, will gradually diminish, but to what extent can only be conjectured.

This case has appeared to me to be worthy of being reported, for it would not have terminated so happily had rules formerly considered as established been followed; and they were not followed because by the administration of chloroform and the use of Nélaton's probe, a leaden ball can be searched for deep in a large joint, without producing any additional disturbance of importance, if the search be made gently; and if found and extracted, the patient's chances are incalculably improved.

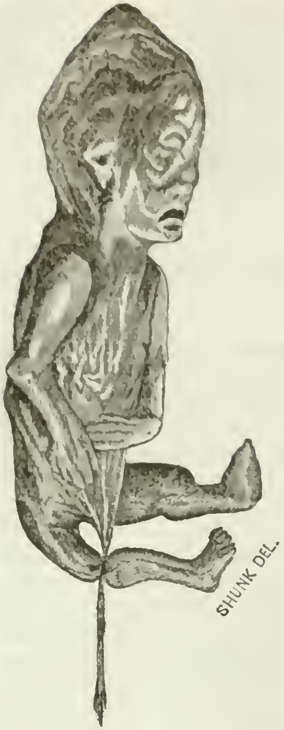
TRANSACTIONS OF SOCIETIES.

Art. XIV.—*Summary of the Transactions of the College of Physicians of Philadelphia.*

1866. *Dec.* 5. *Abortion; Commencing Amputation of the Left Thigh, from being encircled by the Funis and probable Death of the Fœtus from Compression of the Cord.*—Dr. A. Nebinger read the following case:—

I was called to Mrs. S——, who was suffering with uterine pains and hemorrhage. She informed me that she was nearly four months advanced in her pregnancy. She could not assign any cause for the threatened abortion. After having made vain efforts, for several days, to quiet the uterine disturbance, the abortion took place. I was present at the time. The fœtus was expelled with the amnion membrane entire. Having placed this in a basin, I proceeded to remove the placenta. This accomplished, Mrs. S. expressed a desire to know the sex of the fœtus. To satisfy her curiosity I opened the sac, when I was surprised and much interested to find the following conditions present: There was one turn of the umbilical cord (as is accurately represented in the accompanying figure) around the left thigh, about three-quarters of an inch above the knee, and so tightly encircling the limb as to have produced a deep groove in the soft tissues, and to have cut off the circulation of the limb below the part where this funis ligature was fixed.

The case is brought before the Fellows of the College because of the two points of positive interest which it involves, namely, the apparent cause of the death of the fœtus, by compression of the cord, and as a demonstration of the manner in which a fœtus in utero may sustain the *loss* of a limb, or a portion of one. Any fact which will throw a single ray of light upon the subject of congenital deformities and aid in forming a rational, or common-sense, conclusion in regard to how they are produced, cannot be without interest and value. Such defects are frequently accounted for by mothers, and indeed by some physicians, as the results of mental agitation, produced by seeing the deformed, etc. etc. By some physiologists and physicians these deformities have been accounted for by what they are pleased to call an arrest of development. Both of these modes are liable to grave objections, and are, I may say, generally given and received with doubts of their sufficiency. The case here presented, so far as it goes, negatives both those modes of accounting for certain congenital abnormities, and demonstrates how, by *mechanical* means, they may be produced. In this instance, the Fellows will see by even a slight examination of the fœtus, to which I now invite their attention, that it is evident if the cord had not been so tightly wound around the thigh, its compression would not have been so great as to have entirely prevented the circulation through it; the fœtus would then in all probability have lived,



yet the arrest of the circulation in the limb below the point ligatured by the cord would have been so great as to have certainly materially diminished the growth of the leg and the lower part of the thigh, and would in all probability have given rise to sloughing off of the limb, and the child would have been born with a stump as nicely rounded up at the point of separation as if the amputation had been performed by a most expert and skilful surgeon.

The accompanying figure is an accurate copy of a photograph of the fœtus, taken within twenty-four hours after its expulsion from the uterus.

The fœtus, judging from its altered condition and the statement of Mrs. S. in regard to the interruption of the catamenia, had been dead for at least two weeks before it was cast off.

1867. *Feb. 6. Report on Meteorology and Epidemics.*—Dr. W. LEHMAN WELLS read the following:—

In making a report on Meteorology and Epidemics, it is necessary to acknowledge my inability to establish any connection between the state of the atmosphere or the temperature, and the more severe epidemics, other than what is already known; as that vegetable or animal decomposition and a certain degree of moisture are essential in many cases, and that cold is destructive to some epidemics and renders others inoperative for the time. Whether, however, the decomposing substance, the moisture, and the heat, produce the causes of epidemics, are themselves those causes, give rise to conditions requisite for, or at least favourable to, their development, or may not be in some instances entirely independent of them, is often not definitely known. The statistics will, therefore, be presented, and the prominent peculiarities and coincidences noted, in the hope that the exact relation in which they stand to each other may be discovered at some future time.

The statistics of the Board of Health of Philadelphia, although collected and arranged by that body with a great deal of care, are not as useful as they otherwise would be in consequence of the inaccuracy of the returns made by physicians, and of course more especially by so-called physicians, between whom and regular practitioners, unfortunately, no distinction is recognized by the law. To illustrate this inaccuracy, I shall take the month of January of the past year, where there are reported 57 deaths from debility; 32 from convulsions; 29 from inanition; 29 unknown; 24 from marasmus; 4 from sore throat, and 2 from tumours. There are also 3 cases simply reported hemorrhage to 13 in which the seat of the hemorrhage is mentioned, and 8 of cancer to 15 in which the seat of that disease is indicated.

Besides these, 43 deaths are reported from old age; 15 from casualties;

1 from murder; 1 from wounds; 8 from gunshot wounds, and 1 run over on railroad.

There are here 277 cases reported (out of a total of 1402 in the month of January) where the cause of death is more or less uncertain.

After making allowance for these inaccuracies, and for others which are not manifest, but which the presence of these would naturally lead us to suppose must exist in no small amount, there will still remain a groundwork of valuable facts; valuable especially for the purposes of comparison with the death reports of other cities under similar regulations, and where the medical profession is similarly taught and organized, and with those of former years in the same city.

It is important also to remark that the reports of the Board of Health are based, not upon the deaths, but upon the interments, and that a small number must be deducted on that account, if we would arrive at accuracy.

From the meteorological observations kindly furnished by J. A. Kirkpatrick, A. M., Professor in the High School, Philadelphia, and which are entirely reliable, it appears that the year 1866 was remarkable for extremes, both of heat and of cold. Its hottest day, July 17th, was also the hottest for fifteen years, and although the mean temperature of its coldest day, Jan. 8th, was not as low as that of Jan. 9th, 1856, yet the thermometer at one period of the twenty-four hours was at —9° Fahr., or below the lowest point reached in 1856.

The mean temperature for the year was 54.90°, or about half a degree above the mean for the past fifteen years.

The mean pressure of the atmosphere, as indicated by the barometer, was 29.837, the same as that for 1865, and only $\frac{22}{1000}$ less than the mean for the past fifteen years.

The amount of rain and melted snow in the year was 43.573; ten inches less than in 1865, but only a fraction of an inch less than the mean of fifteen years.

Some of the more prominent peculiarities of the summer months (during which cholera made its appearance) were as follows: the mean temperature of the three summer months was 75.63°, or only one-fifth of a degree above that of the mean for fifteen years, which was 75.47°. Mean elevation of barometer in 1866, 29.747, or .072 less than the mean of fifteen years.[1]

Inches of rain in summer of 1866, 8.470, or 3.196 less than the mean of fifteen years, which was 11.666; mean relative humidity in 1866, 66.6; mean do. of fifteen years 66.

In June the mean temperature was 73.68°, or .62° above the mean of fifteen years, which was 73.06°. The barometer was 29.731 inches, or .058 below the mean for fifteen years, which was 29.789. Inches of rain in June, 1866, 3.390, to 4.322, the mean of June in former years.

In July, 1866, the mean temperature was 80.72°, or 2.72° above the mean of July in former years, 78°; 2.513 inches rain fell, to 3.622 the mean of former years.

During the hot weather in July, there were more deaths from heat fever or sunstroke than had occurred for many years. There were also five deaths in August. In all there were 131; 104 males and 27 females. This disparity is always found to at least this extent, and is of course to be accounted for by the greater exposure of men to the sun, and to exhausting labours. 6 cases were boys, 1 girl; 26 between 20 and 30; 38 between 30 and 40; 35 between 40 and 50; 16 between 50 and 60; 8 between 60 and 70; and 1 over 70.

---

[1] For complete tables, see the Journal of the Franklin Institute, Philadelphia.

The number of deaths from this cause would have been greater had it not been for the employment of ice externally as a remedy, by means of which lives were undoubtedly saved which would have been lost before this remedy was brought into notice.

The total interments in Philadelphia, for 1866, was 16,803, which, estimating the population at 750,000, would give a proportion of 1 to 44.63, or 2.24 per cent.

Of these, 8851 were males and 7952 females; 4235 were males over 20 years of age; 4616 were male children; 3766 were females over 20 years of age; 4186 were female children, making 8001 adults and 8802 children. 931 were people of colour.

By deducting those buried in the city, but who died in the country, 643 in number, and the still-born, 798, we shall have 15,362, one death in 48.92, or 2.04 per cent.

The number of interments in 1865 was 17,169; in 1864, 17,582; in 1863, 15,788; in 1862, 15,097; in 1861, 14,468.

The greatest mortality in any one month of 1866 was in August, when 2401 deaths were reported, next in July, 2047, next in October, 1828. December was the healthiest month, only 982 dying.

The disease most fatal to children was cholera infantum, the mortality from which was 1090; next, convulsions, 663; marasmus, 552. Inflammation of the lungs caused 537 deaths; scarlet fever, 487; inflammation of the brain, 312; congestion of the brain 272; consumption of the lungs, 243; croup, 239.

The diseases which proved fatal to the greatest number of children, next to those above noticed, were, measles, 218; diphtheria, 187; dropsy of brain, 181; inanition, 176; inflammation of stomach and bowels, 153; diarrhœa, 139; typhoid fever, 136; cholera, 124; dysentery, 121; variola, 104; pertussis, 79; and cholera morbus, 54 = 1672.

Of all the deaths among children, 2232, or a little more than one-fourth, were from disease of the alimentary canal.

Cholera infantum, as already stated, caused 1090 deaths; in 1865 it caused only 884; in 1864, 641; in 1863, 930; in 1862, 629; in 1861, 618.

The deaths from diphtheria in 1866 were 192; 5 of them adults. In 1865 it was 260; 1864, 357; 1863, 434; 1862, 325; 1861, 489; 1860, 306.

Before 1860, no deaths from this cause were reported. This singular circumstance is owing to their being considered as modified cases of scarlatina, and so classified by the Board of Health before that time. They now report the deaths according to physicians' certificates, not only in this, but in all cases.

The total number of still-born was 798.

The mortality from the principal diseases of the respiratory apparatus was greater in 1866 than in 1865 or 1863; but not quite equal to the mortality in 1864. The deaths from congestion of the lungs, and catarrhal fever were, however, greater in number than even in 1864; this being principally owing to the first three months in the year, when influenza prevailed to a considerable extent, it being much more probable that a case of pneumonia originating in influenza would be designated catarrhal fever than that this somewhat vague term would be given to one of ordinary pneumonia.

In 1866 there were 1944 deaths from consumption, 1 to 8.64 of the total mortality, 994 males and 950 females. In 1865 there were 2026 deaths, 1020 males, 1006 females, 1 to 8.47.

	Deaths.	Males.	Females.	
1864	2089	1087	1002—1 to 8.42	Average of 7 years, 1 to 7.6.
1863	1955	966	989	
1862	1949	961	988	
1861	1817	910	907	
1860	1622	785	837	
1859	1505	780	725—1 to 6.03	
1858	1659	806	853	
		8309[1]	8257	

In former years the relative mortality from this disease was greater, as from 1840 to 1849 inclusive, when it amounted to 1 in about 6.76 from all causes.

This reduction, which is shown more than ever in the reports of the past two years, is probably owing (as was first suggested by Dr. Geo. B. Wood) to the general employment of cod-liver oil as a remedial agent.

On comparing the past nine years, we find (contrary to the rules usually laid down) that more males than females died of consumption in 1859, '61, '64, '65, and '66, and although in the other four years it is otherwise, yet the total mortality of the nine years shows a slight preponderance of deaths among males.

As usual, there are more deaths from consumption than from any other cause. The greatest number in any one month was 217 in January; the next, 185 in October; in July the smallest number died, only 116. There appears, however, to be no rule in reference to this, as sometimes the fewest deaths occur in October, or the other months of autumn. In summer, however, we seldom or never find a greater mortality than in the other seasons.

Between the ages of 20 and 30, deaths from consumption of the lungs are most frequent.

The progress and decline of the epidemic of petechial and other low forms of fever, are represented in the following table, where it will be seen that the epidemic culminated in 1864, when from typhus, petechial or spotted, and malignant fevers, and cerebro-spinal meningitis, there were reported 815 deaths, to 39 and 196 in the two preceding years, and 546 and 193 in the two following.

Smallpox caused 144 deaths; less than one-third of the deaths in 1865, when it was more fatal than for many years. Measles, on the other hand, caused more than twice as many deaths in 1866 as in any one of the four years preceding.

Three cases of yellow fever appear on the report of interments, but they all died elsewhere, the bodies being brought here for burial.

The table of deaths from miasmatic fevers shows a slight falling off in the mortality from that cause.

The deaths from pyæmia and erysipelas are in each case almost equal in number to those in 1865, but less than half those in 1864.

---

[1] Including 1865 and 1866.

Deaths from various Epidemic Diseases.

	Jan.	Feb.	March.	April	May.	June.	July.	August.	Sept.	Oct.	Nov.	Dec.	TOTAL FOR				
													1866.	1865.	1864.	1863.	1862.
Cerebro-spinal meningitis	5	6	8	6	10	9	8	7	6	5	2	5	75	130	144	—	—
Petechial or spotted fever	5	2	2	2	2	2	1	–	1	–	–	1	18	65	263	53	—
Typhus fever . .	8	9	8	11	9	12	5	5	6	12	9	2	96	334	335	131	37
Malignant fever .	–	–	1	–	–	–	–	1	1	1	–	–	4	17	76	12	2
Typhoid " .	34	29	32	22	15	21	22	58	42	52	29	25	381	773	648	486	654
Scarlet " .	61	52	23	38	39	46	30	27	19	32	47	77	491	624	349	275	461
Smallpox . . .	18	25	15	14	16	16	9	5	5	6	10	5	144	524	260	171	264
Measles	14	2	9	21	34	53	44	25	3	5	4	7	221	54	90	82	109

	1863.	1864.	1865.	1866.	QUARTERS.			
					1st.	2d.	3d.	4th.
Pyæmia	44	78	41	38	7	15	8	8
Erysipelas	74	148	79	73	23	25	10	15
Puerperal fever	29	43	27	12	3	—	4	5
" convulsions . . .	11	18	19	27	9	5	3	10
Fever, bilious	8	9	11	15	2	1	9	3
" remittent	18	43	44	24	7	4	9	5
" intermittent . . .	7	12	12	8	2	2	2	2
" congestive	43	77	37	17	1	3	10	3
" pernicious	1	4	1	2	–	–	1	1

The deaths from puerperal fever were less than those in 1865, and little more than a fourth of those in 1864.

Cholera first made its appearance in Philadelphia in the latter part of June, by a few cases scattered about in various distant parts of the city, of whom two died. One case of undoubted cholera occurring at this time (which did not however prove fatal) was seen by Dr. Wilson Jewell, Chief of the Sanitary Committee of the Board of Health. There had been no cholera at the Quarantine.

Great exertions were made by the Board of Health to preserve the cleanliness of the city. Physicians were requested to report the nature of the premises where they saw a case of the disease, and if it were confined, crowded or dirty, measures were taken the same day to have the neighbourhood purified by chloride of lime, soap and water, and whitewash; and by closing entirely cellars and other very badly ventilated apartments. A corps of inspectors was also employed for the purpose of discovering and reporting such unhealthy places. It is undoubtedly in great measure owing to these well-timed exertions that we owe the comparative exemption of our city from what threatened to be a fearful scourge.

The greatest mortality in any one week was 127, for the week ending Oct. 13th. The disease then declined with much greater rapidity than it had advanced. Next to October, the greatest number of deaths occurred in August.

The total mortality was 910.

As regards age, the greatest number, 199, died between 30 and 40; next, 177, between 40 and 50; none under one year.

As regards location, by far the greatest mortality was in the 17th, 18th, and 19th wards, comprising the old districts of Kensington and Richmond. This circumstance is accounted for by the fact that water is there employed drawn from the river Delaware, and consequently contaminated with the impurities carried into that stream by the sewers, and washed up and down by every tide.

The mortality in these three wards was 301, or almost a third of the total mortality from cholera in the city, in one-seventh of the population.

The number of births registered during 1866 was 17,437, an increase over the previous year of 2,009 or 12.37 per cent.

There were 18 more twin births and 39 more coloured births than in 1865.

There were more births in October than in any other month; then in August, September, and July. In April, the number was least; then in the three summer months.

Several tables which we had prepared to show the mortality of all diseases, at various ages, and for each month in the year, are unavoidably omitted from want of space.

ART. XV.—*Summary of the Proceedings of the Pathological Society of Philadelphia.*

1866. *Sept.* 26. *Tuberculous Disease of Testis.*—Dr. PACKARD exhibited a tuberculous testis of the right side, removed by him in the morning from a man about 30 years of age, a patient at the Episcopal Hospital. Previous to removal, the diagnosis had been somewhat doubtful from the stony hardness and weight of the tumour, and its slightly nodulated shape. The man had had venereal disease, probably syphilis, twelve years ago. The operation was done in the usual way, except that the cord was compressed by the pin and wire loop, as in Simpson's third method of acupressure. On section after removal, the tumour was obviously tuberculous, breaking down into an abscess in its more central portion.

(This case did well so far as concerned the local disease, but after the wound had healed typhoid symptoms declared themselves, the patient's strength failed entirely, and he died of phthisis, as shown by the post-mortem examination, on the 28th of October.)

Oct. 10. *Cystic Disease of the Testicle from Injury.*—Dr. PACKARD exhibited a testicle affected with cystic disease, of singular origin, removed by him from a patient at the Episcopal Hospital; and gave the following account of the case:—

Robert Sims, an Englishman, æt. 28, employed on the Reading R. R., was struck, twenty-one months ago, on the left testicle, and on the sternum, by a plank which flew up against him. Necrosis of the sternum ensued, and part of the bone exfoliated. The testicle became much enlarged and swollen, and subsequently an abscess formed and pointed. The same thing happened five times afterwards.

Oct. 6, 1866. On his admission into the Episcopal Hospital, the left testicle was enlarged, hard, lobulated, with an opening anteriorly from which was constantly exuding a ropy-yellow liquid, like synovia mixed with pus.

10*th*. The testicle was removed in the usual way, except that hemorrhage from the spermatic artery was controlled by passing a pin under the cord, and embracing the latter in a loop of wire, as in the third method of acupressure described by Simpson.

On examination the structure of the gland was found to be almost entirely substituted by a mass of cysts, filled with liquid like that discharged, except that it was less ropy.

Cold water dressing was applied, after the wound had been closed with lead wire sutures.

The case did perfectly well, except that some swelling occurred just above Poupart's ligament; this yielded to simple means, and on Nov. 5, the man was discharged entirely cured.

Oct. 24. *Cystic Disease and Degeneration of Kidney.*—Dr. JAMES TYSON exhibited the specimen, and made the following remarks:—

This specimen proved to be one of unusual interest. Careful examination shows the kidney to be cystic, made up of as many as six cysts of a size ranging from ¾ of an inch to 2 inches in diameter. Each one of these cysts was filled with a peculiar creamy matter, of a consistence, however, somewhat thicker than cream, yet so fluid as to tend to exude without pressure. In one or more smaller cysts the matter appeared more gelatinous, and somewhat translucent. The entire cortical structure was thus converted, there remaining only the fibrous capsular portion which was thickened and hardened. *Microscopically* this white cream-like substance was found to consist for the most part of *granular fat*, as indicated by its appearance and response to the reagent used (ether). Here and there, however, there appeared in the field of view, as exhibited by several slides, the so-called granule-cell corpuscles (Bennett), or exudation corpuscles (Virchow), in different stages of degeneration; some almost entire, filled with the dark, highly refracting granules, others partially disintegrated, others completely so, having liberated the granules which went to make up the *emulsion*, while the empty, shrivelled cells remained. These corpuscular appearances were brought out more distincly by the aid of ether.

The glairy, gelatiniform matter was found to contain more largely these corpuscular elements. There were many of the large exudation corpuscles also in different degrees of degeneration, with granules and shrivelled cells. In other words, the degree of degeneration had not gone so far in these gelatinous portions as in the white cream-like product of other cysts. Since in my possession much free oil has exuded from the mass from solution and aggregation of the fat granules.

The above appearances in their different stages are quite significant, and aid us in explaining the mode of growth. The peculiar glairy and creamy products correspond precisely with the contents of certain ovarian cysts, a correspondence for the suggestion of which I am indebted to Dr. Edw. Rhoads, with whom I made the microscopic examinations a second time. The mode of formation of the contents of the cysts is similar to that by which the corresponding ovarian products are obtained, as described by J. Hughes Bennett, though the primary formation of the cyst itself must of course be different, as the ovarian cysts are usually supposed to begin in a dilated Graafian follicle. These cysts are lined with epithelial cells, which, multiplying rapidly, throw off progeny after progeny of young cells which undergo fatty degeneration, become filled with granular fat, and finally break up, liberating the granules which they previously contained, and leaving mingled with them the shrivelled disintegrated walls described as present in the microscopic appearances. The glairy portions, as already stated, have not reached the same degree of degeneration as the white creamy matter, and, therefore, contain more entire granule-cells, and cells having undergone a less degree of degeneration.

I must state, however, that I was unable to detect any epithelium by examining microscopically the close scrapings of the septa of the cysts after this soft pultaceous matter was removed; such matter was composed almost entirely of fibrous tissue, as indeed might be expected, for all of the tubular structure had disappeared and in the onward march of the disease the fibrous capsule was reached, when the process of further formation of cells ceased, though those already formed could of course go on degenerating and producing the peculiar matter with which the cysts were filled, thus accounting for the advanced stage of degeneration of the greater part of it. By no means all of the septa were examined and upon some of them, of later origin, epithelium might have been found. Rokitansky says "there is often no epithelium in the larger cysts, and their inner layer is a nucleated, structureless, or striated blastema, externally splitting into fibres in the direction of the long axis of the oval nuclei it contains."

Nov. 14. *Spina Bifida; Death at age of* 32 *Years.*—Dr. WM. PEPPER, in presenting the specimen, read the following account of the case:—

Benjamin Miller, æt. 32, a merchant, was admitted to the Pennsylvania Hospital, July 17, 1866, reported to be labouring under sunstroke. During the first day he could return imperfect answers, but rapidly passed into a condition of profound insensibility; with upturned, oscillating eyeballs; involuntary discharges; irregular gasping, noisy respirations, but without any paralytic symptoms. He remained in this condition until July 21, when he died. During life, a tumour, oblong in shape, about three and a half inches long, one and a half wide, and the same in height, was noticed in the lower part of the dorsal region. After death, the following particulars were obtained: he had been all his life subject to severe attacks of headache; and whenever the tumour was pressed upon, he would have one of these headaches, with temporary delirium. For the three or four days preceding his admission he had been much exposed to the sun, and was much exhausted, with symptoms, however, of some obscure cerebral disease, rather than of true sunstroke. His habits were very intemperate.

Post-mortem twelve hours after death.—Blood dark and too fluid; lungs deeply congested; heart contained some fluid blood, with firm whitish clots; liver congested; slightly granular and tough; kidney congested; spleen, stomach, and intestines, apparently healthy.

Brain.—The membranes over the convexity were milky and thickened. Around the base of the brain and over the cerebellum, the membranes were coated with tough grayish lymph, matting the structures together.

The membranes, and brain substance were quite pale, and presented no appearance at all of recent inflammation. Upon laying open the lateral ventricles, they were found distended, each one containing about f℥iij of slightly turbid serum. The velum interpositum was opaque; and the choroid plexuses cloudy, and probably enlarged. This condition of the membranes extended down over the pons: but the spinal meninges did not appear diseased.

The tumour in the back was found to consist of the thickened skin inclosing the sac of a spina bifida. The deficiency was seated along the spinous processes of the ninth and tenth dorsal vertebræ; and was about two and a half inches long by half an inch in width.

The dura mater of the cord was continuous over the sac, and adherent to the bone at the point of deficiency. The spinal cord was apparently quite normal, none of its fibres entering the sac of the spina bifida.

Intra-Capsular Fracture.—Dr. H. ALLEN presented the following specimen, accompanied with a brief history.

Mrs. ——, aged 70, suffering from chronic softening of the brain, fell from a lounge to the floor, and received a simple transverse fracture through the neck of the left femur within the capsule. The usual symptoms were manifested; the patient complained of no pain except when interrogated; death ensued on the third day after accident.

An autopsy was held within twenty-four hours after death; no detailed notes upon the condition of brain and arteries have been preserved. The upper third of the affected femur was removed, and the specimen presented to the Wistar and Horner Museum, by Prof. Francis G. Smith, who had charge of the case; it there came under the notice of Dr. A.

The fracture was immediately beneath the head, nearly transverse, without comminution beyond the detachment of a small thin fragment about the size of a half dime, from the posterior wall of the neck. The neck measured three and a half centimetres in length; the angle of the head and neck to the shaft was not perceptibly changed. Upon opening the detached fragment and shaft longitudinally, the interior was found much congested at the neck, portion of the head, and downward along the shaft to the extent of four centimetres. This was more conspicuous along the inferior and inner edge than elsewhere; that in the region of the great trochanter being healthy. At the seat of fracture, the cancellated structure was filled with clotted blood of a black colour, and extended in the shaft from the fractured surface, downward and outward to the extent of two centimetres. In the head, two similar clots were found near the superior and inferior borders. The bone around these clots was more deeply reddened than elsewhere. A fourth small clot was seen beneath the medullary membrane, upon the inner wall of the cavity, at the lower end of the congested area four centimetres below the neck of the bone. These clots with the exception of the last, were thought to have been derived from the blood soaking into the cancelli, from the ruptured vessels about the seat of lesion; the smaller inferior clot was probably obtained from a minute endosteal hemorrhage. Their presence was interesting as suggesting one of the causes of non-union in these fractures. In the head and neck of the aged femur, when the parts possess a tendency to absorption, such clots, owing to deficient number or want of activity in neighbouring vessels, might act as mechanical obstacles to resist efforts at repair.

Extensive Epithelioma of Stomach, without Distinctive Symptoms during Life.—Dr. PACKARD exhibited a stomach, with a portion of the duodenum, pancreas, and liver; close to the pyloric orifice of the stomach was a very large, somewhat earshaped, flattened and lobulated ulcer, of epitheliomatous appearance. The head of the pancreas was not involved in the disease; the liver was obviously fatty.

The history of the case was as follows: Mrs. W. C., æt. 60, had been sick since early in June, 1866. I was called to see her on June 23; she was then suffering from oppression, loss of appetite, general weakness, and distension of the abdomen. Her pulse was feeble and intermittent; her urine somewhat scanty, but not otherwise abnormal. She was taking some purgative pills occasionally, with great relief. She had always been of active habits, although not of robust frame; had had twelve or fifteen children, three of whom only had lived beyond infancy.

I gave her iron and digitalis, and subsequently nux vomica and gentian, together with nourishing diet. She suffered much from flatulence, and took essence of ginger, and afterwards gin, with benefit. Occasional attacks of dyspnœa were controlled by Hoffmann's anodyne. From first to last she had neither vomiting, fixed pain, nor tenderness of the epigastrium, nor did the use of food, or of the pungent articles above mentioned, produce any uneasiness. Blood was never passed by her at stool, to my knowledge; although possibly the blackness of the discharges, attributed by me to the iron she was taking, was partly due to the former cause.

Late in the summer her husband had a dysenteric attack of some severity, and the fatigue of waiting upon and nursing him aggravated her own symptoms. Œdema of the lower limbs, which had appeared from time to time, became persistent and troublesome, and gradually passed into general anasarca. Her urine was full of uric acid and oxalate of lime; nevertheless, she seemed better and more cheerful. On Sunday, Nov. 11, she sat up for several hours, and got rather tired. As her husband was helping her back into bed, her head fell forwards, and she died in a few moments, obviously from failure of the power of the muscular fibres of the heart.

Autopsy twenty-four hours after death.—Mr. W. Müller, of the Pennsylvania Hospital, kindly assisted me. Body quite flaccid; muscles fatty; a good deal of fat in all the tissues.

Heart very fatty; full of soft dark clots; its own veins in a markedly varicose state.

Stomach greatly distended with flatus, but healthy, with the exception of the enormous epitheliomatous growth already spoken of. Gall-bladder full of gas. All the abdominal tissues were in a singularly emphysematous condition.

The other viscera seemed healthy, except that the liver and kidneys were in a state of advanced fatty change. The specimen was referred to a committee.

Nov. 28. *Examination of tumour.*—Report by Drs. EDW. RHOADS, H. ALLEN, and WM. PEPPER:—

Internal surface was flat, elliptical, and measured five inches in length, three inches three lines in width. It was situated at the pyloric extremity of the organ, with its long axis in the line of its circumference, and its lower edge impinging upon the posterior and inferior edge of the pylorus. It was defined by a conspicuously everted lip three lines high, though somewhat thicker and higher at its lower anterior edge. The mucous membrane on the growth was smooth, glistening, and presented a mottled appearance, varying from the dull grayish hue of the healthy membrane to the blackish-brown tinge of capillary oozing. An irregular circular area, one inch in diameter, was seen at the postero-inferior part, which was surrounded by a uniform elevation of the mucous membrane, and corresponded to a preternatural thinning of the walls. Its surface presented several elevations of about the size of a mustard seed. Elsewhere the tumour was even, of uniform thickness save at its superior portion, where several doughy bossillations attained a thickness of one half an inch.

External surface, a number of irregular elevations were met with resembling enlarged lymphatic glands.

The stomach elsewhere was normal.

Examination of gastric growth, &c. Liver.—Cells contained abundant oil drops, their nuclei were for most part obscured. There was also a considerable amount of free oil in globules and granules.

Kidney.—Malpighian bodies were granular; tubules were cloudy and opaque, and contained granular fatty matter.

Stomach.—By scraping the surface of the healthy mucous membrane, a field was obtained, showing very numerous epithelial cells, granular and slightly fatty, and mixed with some free oil globules.

When the surface of the morbid growth was scraped in the same way, the cells obtained altogether resembled those from healthy portions of the mucous membrane: if any difference was noticed, it was that the former were slightly smaller. Upon cutting into one of the nodular masses of the growth from its peritoneal surface; the section presented much the appearance of a hypertrophied lymphatic gland, the tissue being firm and of a pinkish flesh colour. By scraping this surface, a whitish juice was pressed out, which was composed exclusively of rounded cells, quite uniform in size, being rather larger than pus-corpuscles: highly granular and generally showing a nucleus indistinctly through the cell contents. Upon addition of acetic acid, however, these cells cleared up markedly, and disclosed one or two nuclei, but in no instance was a trefoil arrangement of nuclei present. In some of the cells, the nucleus was unusually large in proportion to the containing cell.

A section of this portion showed an entire absence of fibrous stroma; the cells composing the tissue being partly of the character last described, and partly cells of a much larger size, with rather faint outlines and nebulous, minutely granular contents; containing one, or in a few cases, two, large clear nuclei, frequently with one small nucleolus. Sections of the morbid growth in other portions showed the same elements. In no place was any appearance of the glandules of the stomach noticed.

This new tissue was invested by the peritoneum externally, which was not abnormally adherent, nor at all thickened or opaque, and internally by the mucous membrane, which was perhaps thinned, but did not appear otherwise abnormal.

A consideration of the histological elements of this specimen, especially when viewed in conjunction with the age of the patient and the clinical history of the case, appear to your Committee to warrant the conclusion that we have here true adventitious tissue of a more or less malignant nature; and which, from its anatomical relations, was quite probably developed in connection with the gastric glands.

Dec. 12. *Cancer of Stomach, Liver, Spleen, and Mesenteric Glands.*—Dr. EDW. RHOADS exhibited the specimens and made the following remarks :—

Amos Noe, aged 54 years, a blacksmith of unusual strength, and without hereditary tendency to disease, began, in 1863 or the early part of 1864, to suffer pain in the right hypochondriac region with marked dyspeptic symptoms. He emaciated and lost strength quite rapidly, and assumed a markedly cachectic appearance. He continued able to work until a few months before his death; but his bowels became very much constipated, and he began to vomit frequently, with troublesome hiccough.

He took to his bed about two weeks before his death, which occurred December 11, 1866. For some time previously he had great œdema of the lower extremities and considerable ascites. His constipation became obstinate, and towards death he suffered from hiccough and constant vomiting of large quantities of grumous dark-coloured fluid; no severe pain was complained of at this time; there was no bronzing of the skin, though over the right iliac region from the pubes almost up to the edge of the ribs, there was discoloration, with dryness and cracking of the epidermis; this, however, was probably due to counter-irritants applied over this part; there was no jaundice at any time.

About a week before his death, the ascites suddenly disappeared within a period of thirty-six hours, leaving the belly flaccid; there was no simultaneous discharge of fluid, either from the skin, bowels, or kidneys, the only avenue of discharge being the excessive vomiting,

The above history was obtained from Dr. Stroud, under whose care the patient was during the last few weeks of his life, and to whose courtesy I am indebted for the opportunity of presenting the specimens.

I am also indebted to Dr. William Pepper, who assisted in the post-mortem examination, for his aid in describing the various lesions.

Autopsy twenty-four hours after death.—Brain and spine not examined.

Body small and much emaciated; belly scaphoid, the skin lying in folds.

Thorax.—Lungs entirely free, and contained a few calcareous nodules, but were crepitant throughout.

Heart small and flabby; the valves healthy; no traces of pericarditis or pericardial effusion.

Abdomen.—On laying open the abdominal cavity, the liver was found to extend one and a half inch below the ensiform cartilage, but on removing it, it was found not to be enlarged, its position being due to the adhesions described below. Over its convexity, especially over the right lobe, the diaphragm was very strongly adherent; but upon being separated, the adhesion was found to depend upon the development of five or six firm cancerous nodules in the substance of the diaphragm. These nodules varied from the size of a small hazel to that of a walnut, and as they increased in size had encroached upon the tissue of the liver, until they had formed cup-like depressions, the largest being three-quarters of an inch in depth. The peritoneum was smooth over these depressions, slightly opaque and thickened, and was moderately adherent to the peritoneum covering the nodules. Over the posterior part of the convexity of the liver, there were intimate adhesions between the liver and diaphragm, and in one place there was a cancerous deposit involving them both. There were also several large nodules, three-quarters of an inch in diameter, of firm, almost scirrhous, cancer in the right lobe of the liver. The lobulous quadratus was much enlarged and prominent, and upon being incised was found filled with whitish softened cancerous matter.

The *gall-bladder* was very small and empty; its duct was compressed by the mass formed by enlarged glands in the fissure of the liver.

The *stomach* was large, distended, containing a large amount of dark slate-coloured, grumous, pasty fluid. The mucous membrane and walls appeared healthy, excepting towards the pylorus. This opening presented, internally, a nodulated, ragged, whitish or discoloured mass, with a sinuous irregular opening, through which the little finger could scarcely be passed. The pylorus and the neighbouring glands were involved in the cancerous deposit, forming an irregular oblong mass, several inches in diameter.

The pancreas was strongly adherent to this morbid mass, and contorted on itself, but apparently was not involved in the disease.

The exterior of the mass was smooth, and presented a beautiful arborescent distribution of vessels.

The vessels entering the fissure of the liver, the portal vein and hepatic artery, became involved in this growth, which involved the glands in the fissure of the liver, and were much compressed. The cystic duct was also pressed upon, and the pancreatic duct was distended with glairy secretion. It is not probable that the common bile duct was much compressed.

The *kidneys* were congested, but otherwise healthy; the right kidney was drawn upwards from its position by adhesions of its supra-renal capsule to the under surface of the liver, where it lay horizontally and strongly adherent.

The supra-renal capsules were enlarged, especially the right one, and very hard. Upon being cut open, however, there did not seem to be any abnormal deposit in their walls.

The *spleen* was of normal size, colour, and consistence; there was, however, a firm, cancerous nodule, the size of a filbert, on its edge just under the capsule.

The *intestines* were contracted, rather pale, and presented no adhesions. The mesenteric and mesocolic glands were cancerous, some of them being half an inch or even more in diameter, very hard and of a dull whitish colour on section.

The urinary bladder was healthy.

There was no peritoneal effusion, the cavity being, indeed, almost unusually dry.

Microscopic examination.—The supra-renal capsules did not present any characteristic appearances of cancer.

The nodule in the spleen was of a dense scirrhous nature, with a waxy, dead-white appearance on section. It appeared to have no true fibrous stroma, but contained numerous granule corpuscles, and large cells of irregular shape, oval, round or tapering, with one or two large nuclei, with distinct nucleoli. In addition to these, there were smaller cells, free nuclei, and cells resembling connective-tissue corpuscles.

Stomach.—1. Glands outside of the pylorus were whitish on section; less dense than the nodule in the spleen. The juice obtained by scraping the surface contained a few granule cells, as in the spleen, and irregular granular cells, with one or two large nuclei; nuclei either free or imbedded in a granular stroma.

2. Internal surface of the mass around the pylorus was of consistency of cerebriform cancer, and contained many varieties of cells with one or two nuclei. Fragments of gastric glandules were also seen.

The denser portions of this mass contained the same forms of cells with numerous connective tissue corpuscles, but no regular fibrous stroma.

Liver.—The structure of the liver was quite healthy between the nodules of cancer, the hepatic cells being distinct, with clear nuclei, though perhaps with slight excess of granular fat. The lobulus quadratus presented a most beautiful demonstration of cancer cells, of all shapes, with one, two, or three large nucleolated nuclei.

Contents of stomach.—Quite numerous starch granules, oil globules, very varied forms of epithelial cells; masses of hæmatin; a few blood corpuscles and fragments of vegetable and muscular fibres. No sarcinæ ventriculi were found.

Contents of intestines.—A great deal of hæmatin, in finer granules than in stomach; epithelial cells; granular matter, fragments of vegetable fibres, and very abundant torulæ cerevisiæ.

Dec. 26. *Tuberculosis of Lungs, Bronchial Glands, and Abdomen.*—Dr. WM. PEPPER read the following report of the case:—

Fanny ——, æt. three, a delicate, poorly developed child, with strong hereditary tendency to tuberculosis, was admitted to Children's Home about Sept. 1, 1866. She was suffering with a mild attack of measles at time of her admission, and after the symptoms of this disease passed over, she continued thin, weak, and without appetite, with occasional cough and looseness of bowels. The diarrhœa resisted ordinary remedies, and reduced her strength extremely; the cough became more troublesome, and from Nov. 6th she was confined to bed.

Her treatment at this time consisted of ol. morrhuæ fʒj ter die; tr. cinch. comp. fʒss ter die; a small quantity of stimulus and nourishing diet.

Nov. 16. Abdomen rather distended, but apparently indolent. There is marked dulness in the right hypochondrium, for one and a half inch below margin of the ribs. She has several stools daily, of consistence of mush, dark-coloured and very fetid. Respirations are 64 to 72 in the minute; pulse 150, small and feeble. The entire anterior part of the right thorax is deficient in resonance as compared with the left; this is especially marked over apex toward sternum. There is also dulness over the manubrium. Respiration on right side is accompanied by fine mucous râles; toward the apex the breathing becomes bronchial, mixed with larger moist râles. Posteriorly, respiration is rather harsh and hissing, with fine râles. In the left side, the respiration is exaggerated, but unaccompanied by any abnormal sound, save a few moist râles under the scapula. She picks constantly at her nose, and this morning has a quite free attack of epistaxis; tongue smooth and reddish; no vomiting.

19*th.* Somewhat more comfortable; pulse about 140; respirations 55; percussion yields the same results, but the râles over the right side are rather smaller and less abundant; the cutaneous veins of thorax appear somewhat prominent; bowels still opened three or four times daily; passages very offensive; no more epistaxis.

21st. Condition much the same; pulse 140; respirations about 50; the child coughs frequently, but not in paroxysms, and every third or fourth respiration is accompanied by a kind of catch, as though there were some laryngeal or tracheal obstruction. The respirations on the left side are exaggerated and expiration is quite shrill. On the right side, as before noted, small mucous râles anteriorly and postero-superiorly. There is deficient resonance postero-superiorly, but the most marked dulness is over the manubrium and the right apex; the manubrium also appears unnaturally prominent; the stools are rather less frequent and more healthy in character.

30th. Rapidly sinking; her pulse more frequent; cough very troublesome; respirations abdominal, but without a sulcus during inspiration around base of thorax; facies changed; deadly pale; picks at nose, but there has been no more epistaxis. Belly doughy, apparently indolent, without tumour; three or four stools daily: results of auscultation much the same, save that râles over anterior part of right side are diminished; over apex, respiration is bronchial. There is to-day, for first time, a beautifully marked cracked-pot sound to the right of the sternum over the second rib. Percussion-note dull over right half of interscapular space; markedly dull over manubrium and inner third of right clavicle.

Death took place December 1st, 1866, three months from the beginning of the attack of measles.

Post-mortem examination twenty-six hours after death.—Brain and spinal cord not examined. *Thorax.*—Heart healthy; foramen ovale closed. *Left lung* free from pleuritic adhesions, crepitant throughout, but contained numerous isolated nodules of crude yellow and gray tubercle as large as peas. *Right lung:* the upper lobes were solid, heavy, entirely non-crepitant. Upon cutting them, the surface was found uniformly grayish, slightly granular, not friable. In places, nodules were of a yellowish colour and softer consistence than the rest; this was especially noticed along the posterior border of the lung, where in one point there was a little collection of puruloid fluid. The anterior parts of the upper lobe, hardly involving the apex, however, had been the seat of a very extensive deposit of yellow tubercle, which had maintained this part of the lung in the position of extreme distension. A large portion of this, however, had undergone softening, so that on removing the sternum and ribs a considerable cavity was disclosed, filled with grumous pus, and having for its walls the irregular nodulated remains of this tuberculous mass. The limits of this deposit could be traced all around it, as the surrounding lung tissue was of a reddish-gray colour, and the seat of marked gray tubercular infiltration. Whether the entire lobe had originally been in the latter condition, and its anterior portions undergone changes and passed into the form of yellow tubercle, could not be positively said. The lung was very strongly adherent all over, but especially over the upper lobe where the pleura had been the seat of tuberculous deposit. Over the vomica, the pleura seemed to be the seat of a similar firm tuberculous deposit. The lower lobe was not so dense as the others, but contained numerous nodules of tubercle, of which those along the posterior border contained more of the yellow form, and were further advanced toward softening. The bronchial glands were considerably enlarged, the largest, however, not much exceeding the size of a large Lima bean, one inch long by half an inch in width. But by their aggregation they formed a mass around the right bronchus, trachea, aorta, and pulmonary artery, about the size of a small hen's egg. The right pneumogastric nerve passed through this, but did not appear to be much compressed. The glands contained yellow tubercle in nearly every instance, the deposit beginning at the centre, and in some instances, occupying the whole gland; in others, however, there was a layer of gland tissue surrounding the tuberculous deposit. One or two of the enlarged glands seemed to be instances of simple hypertrophy. Under the microscope, the deposit in the lungs and glands was found to contain typical tubercle corpuscles; but the enlarged glands in which no tubercle could be seen by the naked eye, could not be satisfactorily determined to contain it by the microscope.

Liver much enlarged, extending fully one and one-half inch below the edge of the right ribs. Marked peritonitis in the left upper part of the abdomen. Peritoneal covering of the spleen and adjacent parietal layer adherent, and gray granulations, intra-serous, were seen upon separating them. Transverse colon and upper part of the descending colon adherent by delicate, readily-lacerated, connective tissue filaments to the adjoining folds of intestine. No tuberculous granulations were detected between them however. These parts were quite wet with serum, but there could scarcely be said to be any peritoneal effusion.

Spleen contained a few very firm yellow granulations.

Small intestine appeared healthy; the mucous membrane of the latter half of the large bowel, however, was reddened, discolored, and softened, evidently in a state of chronic congestion. The colon was distended with flatus. The mesenteric glands were all enlarged, one or two of them being as large as hazelnuts.

The lower part of the abdomen appeared healthy.

Remarks.—The enlargement of the bronchial glands was clearly diagnosed during life from the character of respiration due to the pressure upon the right bronchus and trachea, and from the dulness on percussion in the interscapular space, the occurrence of epistaxis, and the enlargement of the cutaneous veins of the thorax, though this latter symptom was far from being marked, also aided in the diagnosis. Owing to the slight projection of the *manubrium*, however, and the complete dulness over it and the inner part of the right subclavicular space, a suspicion arose that the glands might be more extensively enlarged than at first appeared probable. The development of a cracked-pot sound to the right of sternum over the second rib increased the doubt, owing to the explanation advanced by Dr. Jenner, that not unfrequently this sound is produced here by the intervention of a thin layer of permeable lung tissue between the enlarged glands and the chest wall at the point of percussion. At the autopsy, however, these symptoms were fully explained by the peculiar form of tuberculous deposit in the anterior part of the upper lobe of the right lung.

The latency of the abdominal disease is also interesting; since the peritonitis was evidently recent, and yet did not reveal itself by distension, spontaneous pain or marked tenderness. The looseness of the bowels had continued from the attack of rubeola.

1867. *January* 23. *Recovery from Perforation of the Vermiform Appendix of the Cæcum.*—Dr. WM. PEPPER made the following remarks:—

The subject from whom the specimen was removed, a man about 70 years of age, was admitted to the Pennsylvania Hospital December 1, 1866, suffering from enlargement of prostate gland, with several false passages. He died a few days subsequently, partly at least from considerable hemorrhage into the bladder.

At the *post-mortem* examination six hours after death, which was conducted by Dr. Williams, Senior Resident of the Hospital, the lungs were found healthy; the heart extremely flabby and soft; the liver and spleen apparently healthy.

The kidneys were lobulated, their pelves dilated; the ureters healthy. Bladder enlarged and thickened; prostate gland much enlarged, with several false passages through it. No calculi present in any portion of genito-urinary tract. Abdominal walls loaded with fat. The omentum, mesentery, and meso-colon likewise contained abundance of fat.

Mesenteric glands not enlarged. The intestines appeared perfectly healthy; and presented no thickening of their coats or abnormal adhesions. On raising the vermiform appendix, however, it was noticed to be unusually stiff, and presented on its free extremity a mass of reddish-yellow colloid matter, about the size of a hazelnut. This adhered closely to one side of the appendix, near its termination; was very glutinous when touched, and had no peritoneal investment. The consistence of its exterior was quite soft and gummy; but towards the centre it became more resisting, as though from the presence of some organized tissue; and on cutting it open a delicate trabecular structure appeared in the centre.

When examined microscopically, it was found to contain some crystals of hæmatin; some large corpuscles, with coloured granular contents, and a few large nucleated cells; but the bulk of the mass was composed of small bodies, arranged in close apposition, and polyhedral from mutual pressure, with a very faint tinge of reddish-yellow. These bodies were entirely non-nucleated, and resembled altered blood-corpuscles. Positive proof of their nature was readily obtained by allowing the specimen to soak in water, when the corpuscles swelled up, and many of them regained the typical appearance of red blood-disks. Prolonged soaking caused all the corpuscles to rupture.

Upon laying open the vermiform appendix, its cavity was found obliterated, the part being, in fact, converted into a fibrous cord. At the centre of the attachment of this colloid mass, however, there was a round opening into the appendix about two lines in diameter. The edges of this opening were smooth and rounded, and a probe passed through it appeared immediately in the centre of the colloid material attached to its peritoneal surface. The cæcum around the opening of the appendix appeared perfectly healthy. The appendix had a meso-colon extending along the greater part of its length. Its extremity, however, and the mass attached to it were perfectly free, and if they had originally become adherent at any point, the adhesion had been entirely destroyed, and all traces of it removed.

We have here, therefore, every possible proof of a pathologico-anatomical character, of a previous perforation of the appendix vermiformis. The entire absence of history, and of any foreign body in the abdominal cavity, of course leaves the cause of the accident uncertain. Blood and lymph have been effused, and have prevented the escape of a sufficient amount of the contents of the bowel to excite any considerable peritonitis. Either no adhesions have been formed with the parietes or elsewhere, or they have been so delicate as to rupture under the natural movements of this part of the intestinal canal. The clot has contracted, undergone considerable absorption, and has finally acquired this gelatinous consistence, adhering firmly to the appendix. The small proportion of lymph effused has made the layer nearest the appendix more firm and organized, and has thus more surely closed the opening. The circumstance, however, which has rendered the cure permanent and complete, has been the adhesive inflammation, affecting the entire extent of the cavity of the appendix, and leading to its obliteration, and the transformation of the appendix into a mere fibroid cord.

This case is, I believe, quite unique, as affording post-mortem evidence of the possibility of the cure of this lesion. The probable length of time during which the clot had existed, and yet the blood corpuscles retained their distinctive features, is most interesting. And it may be added, that this case illustrates well the very trifling importance of the appendix, since its entire obliteration appears not to have been followed by any untoward symptoms.

On some Symptoms which follow Sudden Arrest of the Circulation in the Main Artery of a Limb.—Dr. JOHN ASHHURST, Jr., said: "I desire to call the attention of the Society to two symptoms which I have observed in several cases of deligation of the main artery of a limb, and which have been observed by others in cases of sudden arterial obstruction from disease. I refer to *hyperæsthesia* of the part below the seat of obstruction, and *increased temperature* in the same locality.

"It is generally stated by surgical writers that the first effect of the ligation of a large artery, such as the femoral, is a *diminution* of the temperature of the parts below, followed after some hours by an increase of heat, and still later again by a secondary diminution. I have, however, in two cases observed an immediate *increase* of temperature so rapid as to preclude the idea of its being caused by the afflux of blood to the surface in the establishment of the collateral circulation, and only explicable to my mind by taking into consideration the agency of the nervous system, probably a reflex condition being induced somewhat similar to that which produces the increased temperature in injuries of the upper part of the spinal cord. My observations have not been made with the thermometer, and are, therefore, of course, incomplete. My object in bringing them forward at this time is merely to invite others who may have the opportunity to unite with me in their verification.

"The other symptom to which I have referred, *hyperæsthesia*, I do not find generally noticed by surgical writers. I have observed it in three cases in which I have tied the femoral artery for popliteal aneurism; in the case where it was most marked, the excessive sensibility not entirely disappearing for a week or ten days. This symptom was also very prominent in a case of embolism of the common iliac artery, which Dr. Hutchinson reported to the Society in April, 1862.

"The sensory nerve fibres of the part below the seat of obstruction feel the loss of arterial blood (the local anæmia, as it were), and transmit an instant warning to the sensorium. Can we not here recognize a beautiful provision of nature, giving a caution to the patient to avoid pressure or rough handling of the limb, which, in the impaired state of the circulation, might easily produce excoriation and even sloughing?

"I once met with a case of general anæmia, in which the patient could not cross one leg over the other for a few minutes without the upper one 'going to sleep,' in the popular expression; an extremely disagreeable symptom, which fortunately disappeared with the restoration of the general health."

Dr. PACKARD stated that one of the cases referred to by Dr. Ashhurst had been under his care at the Episcopal Hospital, in August last, with a popliteal aneurism in the other limb, for which ligation of the femoral artery had been resorted to. On that occasion, although a rise of temperature was not noted in the limb operated on, it was found expedient to diminish the thickness of the wrapper of raw cotton placed about it within a few hours after the tying of the vessel.

There was not present, however, the hyperæsthesia which was so marked in the other limb, as mentioned by Dr. Ashhurst. There was, and still is, such a condition of the long saphenous nerve, so that if the limb is touched anywhere in its course there is a marked "shudder" induced; but this must probably be ascribed either to a pricking, or to a partial division of the nerve at the time when the vessel was tied. Nothing like general hyperæsthesia of the limb has at any time existed. This difference between the behaviour of the two limbs of the same individual, under similar operations, seems worthy of notice.

February 27. *Supernumerary Rib.*—Dr. WM. PEPPER exhibited a specimen presenting a bifurcation of the fourth rib on the left side. The bifurcation occurred about two and a half inches from the sternum, and each branch was connected with this bone by a distinct costal cartilage. The specimen was removed from the body of a male adult, who died of pulmonary tuberculosis; no other anomalies were discovered.

REVIEWS.

Art. XVI.—*Disinfection.*

1. *Traité des Désinfectants sous le Rapport de L'Hygiène Publique, etc. etc.* Par M. A. Chevallier, Pharmacien-Chimiste, Officier de la Légion d'Honneur, etc. etc. Paris, 1862. pp. 180.
2. *Third Report of the Commissioners appointed to inquire into the Origin and Nature of the Cattle Plague.* London, 1866.
   - a. *Microscopical Researches on the Cattle Plague.* By Lionel S. Beale, M. B., F. R. S.
   - b. *On Disinfection and Disinfectants.* By R. Angus Smith, Ph.D., F. R. S.
   - c. *On the Application of Disinfectants in Arresting the Spread of Cattle Plague.* By Wm. Crookes, F. R. S.
3. *On Deodorization and Disinfection.* By Thos. Herbert Barker, M. D., F. R. S. E. (Hastings Prize Essay.)
4. *A Manual of Practical Hygiene, prepared especially for use in the Medical Service of the Army.* By E. A. Parkes, M. D., F. R. S. Second edition. London, 1866.
5. *Proceedings and Debates of the Third National Quarantine Convention, held in the City of New York.* 1859.
6. *Disinfection.* By E. R. Squibb, M. D. Brooklyn, N. Y. (Report of the Committee on Disinfection to the Academy of Medicine.)
7. *Chemistry, Theoretical, Practical, and Analytical, as Applied and Relating to the Arts and Manufactures.* By Dr. Sheridan Muspratt, F. R. S. E., M. R. I. A., F. G. S. Vol. I. p. 556. Art. "Disinfection."
8. *Hints on the Control and Prevention of Infectious Diseases in Camps, Transports, and Hospitals.* By Elisha Harris, M. D. Sanitary Commission Document, S.
9. *On the Utility and Application of Heat as a Disinfectant.* By Elisha Harris, M. D. (Proceedings of the Fourth National Sanitary and Quarantine Convention, 1860.)
10. *North British Review*, June, 1866. Art. VIII.—Disinfection.
11. *Annual Report of the Metropolitan Board of Health*, 1867. New York, 1867.

History.—The history of the practice of disinfection is full of interest. Many agents employed for this purpose, and most approved by the moderns, were known to the ancients. Thus, we find that sulphurous acid, recently strongly advocated by Dr. Polli, of Milan, and Dr. Dewar, of Scotland, was used by Ulysses to destroy the odour and toxic properties, of the gaseous products of putrefactive decomposition (*Homer's Odyssey*, Book xxii.), and the tar compounds were the chief agents in the ancient process of embalming. These became "lost arts," to be re-discovered in modern times. The ancients were also well acquainted with many of those hygienic evils against which disinfection is directed. The Romans early learned the dangers of crowding, and the necessity for a proper system of sewerage. Hence the height of the houses was restricted to seventy feet, and the streets widened, by Augustus. The sewers (*cloacæ*) of Rome were of vast size and great extent. According to Livy (lib. i. cap. xxxviii.), these were first made by Tarquinius Priscus, but the principal sewer (*cloaca maxima*) was built by Tarquinius Superbus.[1] There were openings at regular distances to permit the surface-drainage and sewerage to flow into the sewers (*Horat. Sat.*, ii. 3, 242),[2] and a police force[3] was kept for the purpose of cleaning out these receptacles. The water with which the city was so liberally supplied was used (*Plin.*, xxxvi. 15) to flush the sewers, and carry their contents into the Tiber. Our modern schemes of drainage and purification of sewers is not much in advance of the ancient practice.

Boyle, in the early part of the seventeenth century, revived the study of disinfectants and the practice of disinfection. Pringle, in 1750; Guyton de Morveau, in 1773; and Fourcroy, in 1791, proposed agents for disinfection. Sir John Pringle, as the result of his "Experiments on Septic and Antiseptic Substances," recommended "various salts, and the astringents and gum resins of vegetables and fermenting liquors." Guyton de Morveau strongly recommended chlorhydric acid gas, and Fourcroy was the first to propose the use of chlorine (Chevallier).

The actions and uses of disinfectants have been placed upon a more secure and scientific basis by the labours of recent chemists. Conspicuous amongst these are Angus Smith, Crookes, Herbert Barker, Parkes, and Chevallier, whose works are named at the head of this article. We should not omit mention of the very important contributions made by our own countrymen, Drs. Elisha Harris, of New York, and Squibb of Brooklyn—especially the former, who is entitled to the merit of being one of the most active and practical sanitarians in these States.

SUBSTANCES TO BE ACTED UPON BY DISINFECTANTS.—To give scientific value to the knowledge gained in the study of disinfectants, and accuracy to the methods of applying them in practice, it is necessary to know something of the physical and chemical characters of morbific matter, or at least of its habitat. This knowledge is, as yet, unattainable; nevertheless, some of the authors before us have attempted to achieve it.

Mr. Crookes classes the morbid matters, "the putrefactive products of animal and vegetable matter," as follows:—

Sulphuretted Hydrogen.
Phosphuretted Hydrogen.
Ammonia.
Phosphorus and Nitrogen, bases of complex constitution.
Acetic, Butyric, Valerianic, &c. Acids.
Carburetted Hydrogen.
Hydrogen.
Carbonic Oxide.
Nitrogen.
Various animal and vegetable products of little or no activity; and
The special virus of infection.

Of all these substances none are positively known to produce any specific form of disease—except, of course, the special virus, whose chemical and physical properties are unknown. The actions of the others have been studied, and the means of destroying them, chemically, are sufficiently understood. Unfortunately our disinfectants are directed chiefly against the least dangerous, and are not known to be efficacious, except to a very limited extent, against the real morbific matter—the special virus. Although the products of the putrefactive decomposition of animal and vegetable matters do not produce specific forms of disease, they unquestionably exercise no little influence as predisposing causes, especially of the zymotic diseases. Hence it is a hygienic problem in every civilized community, how to get rid of these products. In all large cities the gaseous compounds of hydrogen with carbon, sulphur, phosphorus, nitrogen, and the volatile fatty acids, are given off from the cesspools and sewers. During the late epidemic of cholera in Cincinnati, we saw numerous instances of the influence of sewage gases in increasing the virulence and mortality from that disease. Thus, tenement-houses situated about the open mouths of sewers, in several localities under our observation, were almost depopulated by cholera, when the other hygienic conditions were not unfavourable.

---

[1] Foros in circo faciendos cloacamque maximam receptaculum omnium purgamentorum urbis, sub terram agendam.—*Titi Livii*, lib. i. cap. lvi.

[2] ——— Qui sanior ac si
Illud idem, in rapidum flumen jaceretve cloacam?

[3] Curatores cloacarum.

Herbert Barker, in the course of some experimental investigations on malaria and miasmata, has shown by direct experiment the deleterious influence of sewer-gases. Three dogs, confined in a box into which sewer-gases, consisting of carbonic acid, sulphuretted hydrogen, and sulphide of ammonium were conveyed, suffered from vomiting, purging, and a febrile state. In some similar experiments we failed to induce these effects, probably because the trial was not continued a sufficient length of time; for introducing, at the end of a week, an unexpectedly large amount of gas, the life of the animal experimented on was destroyed in an instant. Parkes has collected numerous observations, for and against the influence of sewer-gases in the production of disease, and has embodied his conclusions in the following statement:—

> "Every one must have seen instances in which headache, sickness, diarrhœa, general malaise, and, after a certain time, great depression of health, with more or less anæmia, were produced. In some cases I have known decided febrile attacks, lasting three or four days, and attended with great headache and anorexia. In some cases, houses into which there has been a continued escape of sewer air, have been so notoriously unhealthy that no person could live in them, and this has not been only from the prevalence of fever, but from other diseases."

Again, when discussing the influence of fecal emanations, the same author remarks:—

> "To sum up, the diseases produced by fecal emanations on the general population seem to be diarrhœa, bilious disorders, often with febrile symptoms; dyspepsia, general malaise, and anæmia—all these being affections of digestion or sanguification; typhoid fever is also intimately connected with sewage emanations, either being their direct result, or, more probably, being caused by specific products mixed with the sewage."

These statements do not militate against the position which we have assumed, viz: that no specific disease has been shown to be caused by the gaseous products of putrefaction of animal and vegetable matter. A toxic effect is undoubtedly produced by these gases, but it is necessary to recognize the difference between the action of a *virus* and a *poison*. Mr. Crookes makes some very satisfactory observations on this point.

> "No poison yet known to chemists can approach, even in a faint degree, the tremendous energy of the active agent of infectious diseases. A poison may be organic, but it is not organized. It may kill with far greater rapidity than the

> virus of infection, but unlike the virus, it cannot multiply itself in the animal economy to such an extent as to endow, within a few hours, every portion of its juices with the power of producing similar results. A virus, on the contrary, renders the liquids of an infected animal as virulent as the original germ. Strychnia may be regarded as the type of a poison, and vaccine matter as the type of a virus."

This difference in the character of virus and poison is fundamental, and if generally regarded, would, as Mr. Crookes suggests, be more convenient, and tend to promote accuracy of thought. The gaseous products of the putrefaction of animal and vegetable matter, must, therefore, be considered as poisons, which, if taken into the organism in sufficient quantity, will produce certain toxic effects, but do not give rise to specific diseases.

A great many conjectures have been hazarded as to the nature and character of the special virus of infection. For a long time the opinions of Liebig have held almost undisputed sway. According to this distinguished chemist, the morbific matter plays the *rôle* of a ferment exciting an action in the body, by contact, correspondent to those catalytic actions to be observed in ordinary putrefaction, and fermentation. In accordance with this view, a large number of epidemic and contagious diseases have been classed together as zymotic diseases. The investigations of Pasteur and Schrœder,[1] have shown that the processes of putrefaction and fermentation are correlative of the growth and multiplication of living organisms, the germs of which are always present in the atmosphere. If the air be deprived of these germs by being filtered through cotton-wool and by passing through tubes heated to redness, no change takes place in the *fermentescible* substance.

These remarkable demonstrations throw new light upon the propagation of disease. Angus Smith assumes that both Liebig's and Pasteur's theories are true, and that "some infections may be wandering about organized, or at least as germs, and others as chemical compounds, with or without definite forms or powers of producing them."

Mr. Crookes observes on the same subject :—

> "This chemical theory (Liebig's) at first sight appears very plausible; but it fails to satisfy one necessary condition in the present case. It is possible to imagine that the force set free in the declension of a complex chemical molecule to a more simple form, will be sufficient to raise a neighbouring molecule to a structure almost as complicated as the original; but according to this view the ferment would be constantly diminishing, whereas in reality it constantly increases in bulk. The hypothesis is therefore insufficient to explain the prodigious procreative power of the original particle. This power belongs only to the nature of an organized germ, capable of producing multiples of itself by a process of nutrition and subdivision."

M. Fremy (*Traité de Chimie, etc.*, tome sixième, p. 916) proposes an explanation of the facts observed by M. Pasteur, without the aid of invisible germs. He designates those substances which occupy the middle ground between immediate principles, and organs, under the terms "semi-organized substances," and "organized corpuscles." The semi-organized substances are in general, liquids, but may take form, solidify, group other bodies about them, and really organize themselves, under the influence of a force of organization which is a sort of vitality; they then constitute organized corpuscles. These two forms are exemplified in the starch grain, and in the vitelline grain. M. Fremy considers yeast an organized corpuscle, which results from the association of many different organic and inorganic bodies—a solidification of the elements which compose it, under the influence of a soluble semi-organized substance, which is produced in the interior during maturation, or in the interior of the barley grain, in the form of diastase, during the germination of the barley. He sums up his views as follows:—

---

[1] An excellent résumé of the views of these *savans* may be found in the elaborate *Traité de Chimie*, par J. Pelouze et E. Fremy. Tome Cinq. Art. *Fermentations*, pp. 203 et seq.

> "1. The seed of yeast is nothing but an organized corpuscle.
>
> "2. This corpuscle is formed as all other corpuscles in the body, by the association of many immediate principles.
>
> "3. This organic association is determined by different influences, but especially by the action of a soluble semi-organized body, which forms itself during the maturation of fruits, or the germination of grains, and also in the interior of the yeast seeds during fermentation. * * *
>
> "4. That which is called germination or gemmation of the yeast plant is nothing but the phenomenon of organic association—an action of an organizing body upon the soluble and organizable elements found in the fermentescible liquor.
>
> "5. Germs of alcoholic ferments do not exist in the air.
>
> "6. The juice of fermentescible fruits do not contain germs of alcoholic yeast: there is found in them only a sort of soluble ferment which determines the union of the organizable elements existing in the liquor which associate themselves together, producing yeast."

These views of M. Fremy are nothing more than an elaborate statement of the doctrines of spontaneous generation. The panspermic theory of M. Pasteur seems to us to be the more reasonable of the two. Can either be applied to explain the nature and mode of action of morbific matters? The presence in the atmosphere of so many invisible germs may serve to explain the occurrence of epidemics; but, unfortunately, the demonstration of the existence of disease producing germs is wanting. If the views of M. Fremy be correct, we must deny the existence of the invisible germs. There are, in truth, no facts, nothing but vague analogies on which to base the zymotic theory. Beale has justly, we think (*Medical Times and Gazette*, August 18, 1866), taken exception to the doctrine. The convenience of the theory and its apparent explanation of a multitude of facts led to its almost universal adoption. But now, fortunately, we believe, for the progress of medical science, investigators have set about a study of the facts themselves, and are no longer content with a plausible explanation of phenomena.

Foremost among these is Dr. Beale. In his report to the Cattle Plague Commissioners, this able observer has, with his usual industry and with a calm and comprehensive judgment, sought to reach the bottom of the subject. He has, it seems to us, more nearly than any one, ascertained the real position, character, and mode of propagation of morbific matter. His views are embodied in the following extracts:[1]—

> "The various facts and arguments advanced in this report render it, I think, probable that the materies morbi or contagium of contagious diseases, like pus, is generated in the organism under certain special conditions. Like pus, I think, it has originally descended from the germinal matter of the organism. So virulent is the poison, and such is its power of living under varying conditions,

---

[1] He has also developed his views in the Physiological Anatomy and Physiology of Man, by Todd, Bowman and Beale, Part I. Also Medical Times and Gazette, Sept. 1865.

that having once sprung into existence, it is almost impossible to extirpate it. If, however, it were possible to destroy all the existing particles of any specific form of contagious germinal matter, it is reasonable to conclude that no new living matter with the same peculiar properties or powers, would be reproduced, unless the very same complex conditions which were present at its origin recurred."

Dr. Beale has defined in various publications what he means by germinal matter. In his edition of *The Physiological Anatomy and Physiology of Man*, p. 11, he has repeated his observations, from which we quote:—

> "The simplest or most elementary organic form with which we are acquainted consists of a portion of this soft, transparent, colourless matter, surrounded by a layer of matter formed from it, which may be so thin as to be hardly visible. This latter results, in fact, from the action of external conditions upon the most external portion of the mass. Such an elementary part may be less than the $\frac{1}{100000}$ of an inch in diameter, and may, we believe, exist so small as to be invisible. Still it is a living, and, in a certain sense, independent organism, capable of increase, and endowed with the power of giving rise to other bodies like itself. These wonderful powers, as already stated, reside not in the *formed* matter upon the surface, but in that within, which is in a *formless* but *living* state. The latter may be termed *germinal matter*."

The relation of the germinal matter to morbific matter is expressed in his report to the Cattle Plague Commissioners.

> "I have shown that even with the aid of the highest powers of the microscope no differences can be discerned between germinal matter from the cell or elementary parts of the highest organism at any age or period of development, and germinal matter, of which the lowest, simplest being in existence is composed. * * * It will probably strike many as remarkable that the highest magnifying powers hitherto placed at our disposal, serve but to convince us that a minute particle of the germinal matter of the most malignant tumour, or the most rapidly growing pus-corpuscle, resembles in every particular that can be ascertained, a minute particle of healthy, living, germinal matter from the blood or from any tissue, and it is proved beyond a doubt by the same means of inquiry, that the living particles of germinal matter in vaccine lymph cannot be distinguished from those present in normal lymph or chyle."

The differences in properties of the germinal matter in its different situations are referred by Dr. Beale to *differences in power*—a vague term, substituting one difficulty for another. We might attempt to explain the same phenomenon by the use of Fremy's term, "the power of organic association." Whether we can explain the peculiar powers of germinal matter in an aberrant state (morbific matter, materies morbi) or not, the practical fact remains that such matter cannot be distinguished from purely normal germinal material, and that to accomplish its disorganization by chemical means is to destroy its life, and therefore its power of reproduction.

As we have already indicated there are no facts, nothing but analogies, to support the panspermic theory of the propagation of diseases. The researches and demonstrations of Pasteur render it *probable* that our atmosphere contains vast numbers of invisible germs floating in it. In the discussion of the action and uses of disinfectants, it will be convenient to assume the existence of these germs.

MODE OF ACTION OF DISINFECTANTS.—The term disinfection has a much wider application than its etymological signification warrants. As ordinarily employed it includes deodorization and the power to antisept. To disinfect is to destroy morbific or infectious matter; to deodorize is to destroy offensive gases which may or may not be morbific; to antisept is to prevent or arrest the process of decay. Most of the so-called disinfectants are little more than deodorizers. The true disinfectants are comparatively few in number. Various classifications based upon these differences in properties and powers have been proposed by several of the authors now before us. Chevallier, Parkes, Angus Smith, and Crookes do not suggest specific classifications, but discuss those agents in groups according to some of their properties. Chevallier divides them according to their physical state into gases, solids or liquids, and solids. Dr. Harris proposes to classify disinfectants under four heads:—

> "1. Absorbents of moisture and of noxious effluvia; 2. Oxidizers and deoxidizers; 3. Other chemical agents that break up noxious compounds; 4. Agents that form indestructible compounds with putrescent materials; or, that destroy cell-life and the cryptogamic and infusorial organisms."

This classification has been objected to by Herbert Barker on the grounds that the first class are not disinfectants at all, and that the third and fourth classes constitute but one, "inasmuch as chemical agents that either enter into combination so as to form new compounds, or that break up compounds, act, in so far as the process is concerned, in the same way." These criticisms are not well founded, especially as regards the 3d and 4th classes, which are chemically distinct. The 2d and 3d classes should, however, be embraced under one head. Thus Richardson includes all disinfectants under two heads: those which destroy noxious matters by oxidization, and those which arrest action of all kinds. Barker proposes to classify them under three heads; the first two of the classes being identical with those proposed by Richardson; the third being agents that physically restrain the action of the noxious compound, whereby its poisonous properties are neutralized.

The agents employed for disinfection are so numerous, and their actions so diverse, that it is extremely difficult to arrange them under any system of classification yet proposed. Some act by oxidizing, as heat, ozone, chlorine, bromine, iodine; others by deoxidizing, as sulphurous acid; some enter into combination with the noxious matter, as the metallic salts and mineral acids, and others act physically as absorbents, as fresh earth and charcoal. Many of the agents employed as disinfectants act in several modes. Thus chlorine decomposes the compounds of hydrogen with sulphur, carbon, phosphorus, etc., by entering into combination with hydrogen, forming chlorhydric acid. This chemical action is the ground of the efficiency of chlorine as a deodorant, for these hydrogen compounds are the principal offensive gases given off in the process of putrefactive decomposition. But chlorine has a disinfectant as well as deodorant power. It decomposes the vapour of water, and sets free oxygen in its allotropic state, or as ozone. Again, sulphurous acid is a powerful deoxidizer; it abstracts oxygen and passes to the state of sulphuric acid; but in addition to this property it is very destructive to the cryptogamic and infusorial organisms. Further, charcoal and fresh earth promote chemical changes, as well as physically restrain noxious gases. A consideration of these facts renders it evident that any system of classification will be defective. So much uncertainty also exists with regard to the mode of action of many disinfectants that it would be difficult to accurately assign them to classes. In order to present in an intelligible form the conclusions of the authors of the works before us, we may adopt the classification of Herbert Barker, which is probably as little objectionable as any other:—

1. Agents that chemically destroy the noxious body.

2. Agents that hold the noxious body inactive (antiseptics) by arresting chemical change.

3. Agents that physically restrain the action of the noxious compound, whereby its poisonous properties are neutralized.

If we had any positive knowledge of the special virus of disease (morbid germinal matter, or cryptogamic or infusorial organisms), the so-called disinfectants might with great propriety be arranged in the following classes: deodorants, antiseptics or colytics,[1] and disinfectants proper.

APPLICATION OF DISINFECTANTS. I. *Agents that chemically destroy the noxious body* may be employed against gases, liquids, or solids. The leading agent of this class is heat, which acts, of course, by oxidation. Dr. Henry, F. R. S., of Manchester, proposed, in 1832, the application of heat as a disinfectant. He showed that the virus of scarlet fever and of plague contained in clothing could be thoroughly destroyed, so that they no longer possessed any infectious property, by exposure to a temperature of 212° F. Dr. Harris' very interesting monogram contains a *résumé* of Dr. Henry's experiments, and various observations made by himself, showing the great value of heat in the destruction of the special virus of disease. Barker embodies his conclusions in the following language: "When organic matters in the solid state are deposited in clothing, the exposure of the infected articles to great heat, as to steam or boiling water, is the readiest, the easiest, and the most effective method." Dr. Harris relates that Dr. Von Busch, of Berlin, eradicated the virus of puerperal fever, which obstinately adhered to the wards of the Berlin Lying-in Hospital, by elevating the temperature to 167° F. by means of common stoves. This remarkable experiment proves the utility of heat as applied through the air. Sufficient attention is not paid to the use of heat in destroying morbific matters. Hot air, steam, and boiling water may be employed whenever the circumstances admit. Hot air and steam can be used in rooms, houses, and hospital wards very readily, and boiling water is a convenient agent for destroying the virus adherent to clothing, and other fomites. The necessary temperature to accomplish these objects is not definitely ascertained. Dr. Henry concludes that as the infectious matter of cow-pox is rendered inert by a temperature not below 140° F., more active contagions are probably destructible at temperatures not exceeding 212° F. As the cryptogamic and infusorial organisms may play the *rôle* of infections, it is important to ascertain at what temperature they may be rendered inactive or be destroyed. Berkeley states, in his *Outlines of British Fungology* (p. 32), that the spores of certain fungi will bear a moist heat equal to that of boiling water without losing their power of germination. It may be safely asserted, as a general rule, that these organisms are not destroyed by a less temperature than that sufficient to effect their complete disorganization. Various experiments demonstrate this. Pasteur has shown, by repeated observations, that these organisms will not become developed in solutions raised to the boiling point, and then hermetically sealed. On the other hand, Prof. Jeffries

---

[1] The term *colytic* was introduced by Angus Smith "to express that quality, whatever it may be, by which the evident inclination to move is arrested." Derived from κωλύειν, *I restrain*.

Wyman, of Cambridge, has recently apparently demonstrated that these organisms are developed even after all the precautions insisted upon by Pasteur have been adopted; but Prof. Wyman is, we believe, an advocate of the doctrine of spontaneous generation. It was ascertained by Dr. Henry that woollen and cotton fabrics could be exposed to a dry temperature of 220° F. without injury. There can be no doubt that this temperature would effect the chemical decomposition of most morbific matters, and even of the spores of disease-producing fungi.

Next to a high temperature, chlorine is considered by some of our authors as one of the best disinfectants. According to Herbert Barker, "for rapid deodorization and disinfection, chlorine is the most effective agent known." This conclusion was reached after numerous comparative experiments. Chevallier also places chlorine in the front rank. It is questionable whether it is deserving of the high eulogiums passed upon it. As a *deodorant* there can be no doubt of its efficacy, for it breaks up the odorous gases (hydrogen compounds) developed in putrefaction, but it does not appear to be equally effectual against the special virus of disease. Thus Dr. J. P. Loines[1] concludes, as the result of some carefully conducted experiments, that chlorine, in quantity sufficient to be irrespirable, does not destroy the infectious property of vaccine virus. Mr. Crookes has performed an experiment showing that chlorine acts first upon the gaseous products of decomposition, and that if virus or spores of fungi are to be reached, large quantities of this agent must be used. Beside the unpleasant odour of chlorine, and its irritant action upon the respiratory organs, there are other objections to its use. Thus, when liberated in rooms the walls of which are whitewashed, it enters into combination with the lime forming the deliquescent chloride of calcium. Dr. Squibb loses sight of this fact in his warm advocacy of lime-wash and chlorine fumigations.

There are various methods of generating chlorine for deodorization and disinfection. The most common is the use of chloride of lime, from which the chlorine is given off slowly, but more rapidly on the addition of an acid. As ordinarily employed it is very objectionable. It changes, as we have seen, into the deliquescent chloride of calcium, and keeps the place to which it is applied permanently damp. Chlorine can be readily obtained from chlor-hydric acid, which contains 97 per cent. of this gas, by heating it gently with peroxide of manganese; or it may be obtained by treating a mixture of peroxide of manganese and chloride of sodium with sulphuric acid. Such preparations are made on a large scale, and put up in a convenient form by manufacturers for this purpose. To regulate the supply of chlorine in the sick-chamber, Herbert Barker proposes to distribute it from half-ounce vials, at as great a distance as possible from the patient. Such a method of evolving chlorine is by no means so objectionable as sprinkling the floor of the apartment with chloride of lime, and is more efficient than suspending cloths moistened with a solution of chlorine or chloride of lime.

Ozone, as is well known, is active oxygen, and is a more powerful oxidizer than common oxygen. It attacks organic matter with great energy, but, like chlorine, its energies are expended in destroying odorous gases; the special virus or morbific matter is last of all acted upon. For disinfection of air, according to Herbert Barker, "for steady and continuous effect, ozone is the best agent known." There can be no question that for the deodorization and disinfection of the sick-room or hospital ward, it is the most elegant and convenient, and also effectual agent, consistent with the comfort and safety of the patient, which can be employed for this purpose. During the last cholera epidemic we employed it with great advantage in the wards of a cholera hospital. There are certain objections to its employment in all cases. Thus, ozone has an undoubted power of inducing coryza and bronchitis, and, according to Richardson, congestion of the lungs and pneumonia may be developed in rabbits by causing them to breathe an atmosphere highly charged with it.

---

[1] Medical Record, March 15, 1866.

The method of employing ozone for the disinfection of air, is simple enough. Some sticks of freshly-scraped phosphorus may be placed in a saucer, and partly covered with distilled water. The sticks of phosphorus may be more or less covered with water, to regulate the rate of oxidation; and therefore the production of ozone. Dr. Barker has figured a convenient apparatus for regulating the supply of ozone in the sick-chamber, but the simple arrangement of which we have spoken is very convenient for the purpose, and quite as effectual as a more costly and complicated apparatus. It has been objected to this method of generating ozone that the fumes of phosphoric acid which escape are hurtful to the sick. Herbert Barker disposes of this objection by saying that "experience supplies no evidence of mischief or danger from this cause." This accords with my own observation. If, however, the small quantity of phosphoric acid may, from any cause, prove objectionable, the ozone may be obtained by another process, by moistening powdered permanganate of potassa with sulphuric acid.

Ozone may be applied to the disinfection of solids and liquids in the form of *ozonides*, of which the most important are permanganate of potassa and peroxide of hydrogen. The former has grown into important medical and surgical uses and applications; it contains oxygen as ozone, to which its extraordinary deodorant and disinfectant power is due. The peroxide of hydrogen is equally effectual and for some purposes more desirable. Thus for the destruction of organic matter in water, it is preferable to the permanganate of potassa, because it imparts neither taste nor colour to the water. The objections to its use is its cost. "Whoever cheapens it," says Angus Smith, "will do good to society."

The action of the ozonides does not continue long. When added to decomposing liquids and solids, they destroy odour and oxidize the organic matter very satisfactorily; but after awhile the effect ceases and the process of putrefaction is resumed. Some experiments by Barker show this conclusively. "Solution of peroxide of hydrogen was good for sixteen days, then decomposition commenced and went on with great rapidity to complete disorganization. Permanganate of potash (Condy's fluid) was bad, decomposition commencing in it on the sixth day."

Bromine and iodine act in a very similar manner to chlorine. The chemical relationship between chlorine and bromine is especially strong. Bromine decomposes the gaseous compounds of hydrogen evolved in the process of putrefactive decomposition, and also combines with the hydrogen of the vapour of water, setting free oxygen in its allotropic state. Bromine is next to chlorine in efficiency in the disinfection of air, and is superior to chlorine in the disinfection of solids and liquids. It is superior to chlorine, also, in the convenience and simplicity of its application: it is only necessary to remove the stopper from the bottle containing it when the vapour, notwithstanding its density, will rapidly combine by diffusion with the air. There are, however, various objections to bromine; it is expensive, its vapour is irritating to the bronchial mucous membrane, and the liquid is corrosive, producing an unhealthy ulceration of those parts of the body with which it comes in contact.

Iodine possesses a power of deodorization and disinfection hardly to be anticipated from its chemical actions. Its affinity for the gaseous compounds of the putrefactive process, and for the hydrogen of the vapour of water, is much less than that of chlorine and bromine; yet, in some respects, it is preferable to either. Herbert Barker has concluded, as the result of a variety of experiments, that "in the absence of ozone, iodine, exposed in the solid form to the air, is the best;" and that "for the deodorization and disinfection of fluid and semi-fluid substances undergoing decomposition, iodine is best." In addition to its usefulness and effectiveness, iodine has the merit of being easily applied to the disinfection of both gases, and solids and liquids. There are several methods of applying it; the crystals may be simply exposed to the air in a common saucer, or the tincture may be exposed in the same way; in this case the effect is gradual and sustained. When prompter effects are desired the crystals may be vapourized by heating on a plate; the vapour is distributed through the air and the iodine is deposited in a finely-divided state on all objects in the apartment, thus keeping up the effect for a considerable period.

Theoretically nothing can be more perfect than the action of the oxidizing disinfectants which we have just considered upon noxious organic matter; but their practical utility comes far short of this. Experiments and observation show that before specific virus or septic germs are attacked, the hydrogen compounds must be destroyed; for if these products continue to be evolved the oxidizing powers of the disinfectant will be consumed before the specific virus or septic germ can be reached. All odorous substances may disappear, be broken up by oxidation, and yet the septic germs remain untouched and possessed of their morbific power. Mr. Crookes has well observed that "oxidizing disinfectants possess little, if any, continuous action. What they attack is destroyed perfectly, but what they leave has no special resistance to decomposition conferred upon it. They remove the products of decomposition, but they do not take away the power of further putrefaction.

The mineral acids and the metallic salts, employed as disinfectants, belong to the first class. Nitrous and sulphurous acids are, more properly, colytic, and will be alluded to in connection with that class. Nitric and sulphuric acid, the nitrates and sulphates, are oxidixing disinfectants; the chlorides of zinc, iron, and mercury form, with organic matter, combinations which resist change. In Chevallier's treatise (p. 132) there is a list of substances proposed as disinfectants from 1762 to 1846, amongst which we find no less than thirty acids and metallic salts; but a portion of these have stood the test of experience. We propose to examine those of most practical importance. It is obvious that disinfectants in the liquid and solid form, non-volatile, can be applied only to the disinfection of liquids and solids. We may reject, at once, the mineral acids as practically unavailable, unless employed merely to disengage gaseous disinfectants. The nitrate of lead, the sulphates of zinc, copper, and iron, and the chlorides of zinc, iron, sodium, and manganese, are the chief metallic disinfectants. These vary chiefly in price, rather than in efficiency. The nitrate of lead is the base of Ledoyen's liquid, the use of which in the Paris hospitals, according to Chevallier, was very satisfactory, but not sufficiently so to establish its pre-eminence over the salts of iron and zinc. One of the most useful in respect to efficiency, and economical in respect to price, is the sulphate of iron, and hence it may be largely employed to disinfect sewers, privy vaults, and indeed all forms of decomposing organic matter. An objection to its use, which has prevented its employment in Paris for disinfecting the gutters, is its power of colouring black the substances upon which it acts (Chevallier), and hence the more costly, if not more efficient, sulphate of zinc is employed for disinfection of noxious matters exposed to public view. It may be useful to state that the sulphate of iron dissolves in its own weight of cold water, and that three pounds have been ascertained to be sufficient to disinfect or deodorize fifty gallons of fecal matters. Some well conducted comparative experiments are wanting to show the relative value of the sulphates of iron and zinc. It appears that the mixed sulphates, of iron and copper, and of zinc and copper, are more effectual than either acting alone. The mixed salts of zinc and copper, dissolved in water, constitute the *antimephitic liquid* of M. Larnaudès; the proportions of the several ingredients in 1000 parts are as follows: water 975, sulphate of zinc 23, and sulphate of copper 2. This liquid was found to have an advantage over a similar solution of sulphate of iron. We find some interesting comparative experiments as to the value of the sulphate and chloride of zinc, in Herbert Barker's Hastings Prize Essay. His conclusions are stated as follows: "For the deodorization of putrescent organic matter, as well as for the preservation of fresh matter, chloride and sulphate of zinc are by far the best agents." As the result of another set of experiments he observes, "Practically there is no difference between the two salts." This is a fact of considerable importance, since the chloride of zinc is a much more expensive salt than the sulphate. The chlorides of zinc, iron, manganese, and sodium, have a comparative power of disinfection in the order in which we have just named them.

There is another agent belonging to this class whose properties have not yet been discussed—quicklime. This combined with charcoal ("calx powder") is strongly recommended by Squibb, evidently, however, on theoretical grounds. Lime is an absorbent of moisture, is destructive to organized germs, and combines with the gaseous products of putrefactive decomposition. Some experiments of Barker, which we have repeated, show that lime can hardly be considered a deodorizer at all, and that it causes a rapid evolution of ammoniacal gas, when used to disinfect putrefying organic matter. As the results of practical observation have much greater value than any theoretical view, we are compelled to assign lime to a comparatively low position in the list of disinfectants of the first class.

II. *Agents that hold the noxious body inactive by arresting chemical change.*—There are important differences between the agents of this and the preceding class. The latter attack those odorous gases developed by putrefaction, and last of all—if they possess the power—oxidize and destroy the special virus of disease. If *materies morbi* consist of dead organic matter declining in complexity of chemical constitution, then the action of oxidizing disinfectants might prove sufficient. This view of the character and actions of *materies morbi* is taught, it will be remembered, by Liebig and his school, who have given origin to the zymotic theory of disease. Angus Smith uses his term, colytic, in a sense antagonistic to catalytic; in other words, colytics, restrain or prevent that tendency *to move* characteristic of catalysis. Whilst some of the agents of this class may be merely colytic, others of them manifest properties much more important than a mere power to arrest catalytic changes. There are many reasons for believing, as we have already shown, that *materies morbi* is not dead organic matter, but living matter capable of growth and multiplication, whether existing as an organism or not. Further, it appears probable that germs exist in the atmosphere, capable of growth and development when the necessary conditions are presented to them.

The agents of this class do not all act in the same manner, and hence, in their applications, they should be selected with reference to their peculiar properties. Many of the antiseptics attack with energy the *materies morbi* —the living organisms—without at all deodorizing; some act as deodorizers as well as colytics, and some appear to act chemically by abstracting oxygen and thus preventing change or decomposition.

Sulphurous acid is one of the most ancient of disinfectants. Several of the authors before us quote the lines in Homer's *Odyssey*[1] referring to the use of burning sulphur by Ulysses as a fumigating agent; and also the reference in Ovid's *Fasti* to the use of the same substance for purifying sheep. Several investigators have, within a recent period, ascribed extraordinary powers to sulphurous acid. Observing the action of this agent in arresting fermentation, Dr. Polli was led to propose the use of the sulphites in zymotic diseases, or as Dr. De Ricci prefers to style them, catalytic diseases. The extraordinary confidence at once unhesitatingly given to these statements of Dr. Polli is certainly marvellous. In the first place, it is a pure assumption that the class of diseases known as zymotic are propagated by a peculiar ferment. In the next place, admitting this assumption to be true, it is obvious that the sulphurous acid could not alter those changes induced in the solids and fluids by the ferment, and that, to be of use, it should be administered as a prophylactic, or at least before the phenomena of the disease declare themselves. Lastly, the tendency of sulphurous acid to pass to sulphuric, and the absence of any proof (except the statements of Dr. Polli) that sulphurous acid passes through the organism unchanged, renders it probable that the conversion into sulphuric really takes place. It is in the prevention of disease, then, rather than in the cure of it we may hope to use sulphurous acid with advantage. Dr. Dewar was fortunate in the application of it to arrest the spread of the cattle plague. Pleased with his success, he has sought to extend the use of his remedy to a large number of diseases to which it has no applicability; amongst others to phthisis, and in order to account for its curing his coachman of consumption he has invented a cryptogamic theory of that disease. He reasons thus: As sulphurous acid is very destructive of the cryptogams, and as it cures phthisis, *ergo*, phthisis must be caused by a cryptogamic parasite. Mr. Crookes speaks in terms of commendation of sulphurous acid as a disinfectant in cattle plague, thus confirming the statements of Dr. Dewar. Angus Smith also eulogizes its properties on chemical grounds. The sulphite of lime mixed with carbolic acid constitutes the efficient and well-known McDougall's disinfectant. The evidence now accumulated renders it certain that sulphurous acid is one of the best of all the agents proposed for disinfection. It is inexpensive, easily applied (by the combustion of sulphur), and may be inhaled in considerable quantity without injury. There are some objections to its use. Thus, it bleaches clothing, and meeting in the interstices of the cloth the vapour of water, is converted into sulphuric acid which rots the fabric. The affinity for moisture renders the use of sulphurous acid gas, for the destruction of organic germs, more effectual than it would otherwise be, for these germs, as is well known, adhere to particles of moisture and develop most abundantly in damp situations. Mr. Crookes has published some interesting and conclusive experiments showing the power of sulphurous acid to destroy the vitality of germs. Angus Smith narrates some experiments demonstrating its extraordinary antiseptic power as shown in the preservation of fresh meat. Dr. Dewar has also experimented largely with it as an antiseptic, and has preserved meat which was afterwards eaten with great satisfaction. Indeed, there can be no question as to the colytic power of sulphurous acid, or the power to destroy germs. In addition to these important properties, it is a deodorizer of no inconsiderable value, in which respect it possesses advantages over most of the other agents of this class. In the disinfection of unoccupied rooms, hospital wards, or houses, it is preferable to chlorine; whilst the latter forms by combination with the lime of the whitewash deliquescent chloride of lime, the former unites with the lime to form the dry sulphite of lime, which continues the effect for some time after the fumigation.

---

[1] Bring brimstone, the relief of evils, and fire, that I may fumigate the house. * * * Ulysses well fumigated the house, and the court, and the hall.—*Od.* XXII. 481.

It thus appears that sulphurous acid answers all the requirements of a disinfectant and deodorizer, more completely than any agent thus far considered.

The very able report of Mr. Crookes is chiefly taken up with an examination into the mode of action and uses of carbolic and cresylic acids. He presents some very striking facts. Angus Smith has also experimented largely with these agents, and has formed conclusions highly favourable to their usefulness.

Carbolic and cresylic acids (creasote) are not truly acids, and are assigned by most chemists of repute to the alcohol series. Acidity, however, is a prominent feature. Creasote prepared from coal-tar, consists of a mixture of the two acids, but according to Hlasiwetz (Crookes), creasote prepared from wood tar is a different substance.

The antiseptic power of wood tar and coal tar compounds has been known from a remote period; the latter having been the influential ingredient in the materials used in the ancient process of embalming. The power of wood smoke to preserve meat from decay is familiar to every one. Dr. Squibb proposes to utilize this practical fact; he recommends that tenement houses before being thoroughly whitewashed, be fumigated by the smoke of a wood fire burning in the cellar. This would hardly be as effectual as the application of whitewash followed by thorough fumigation with burning sulphur. A citizen of Cincinnati, without being informed as to what has been accomplished abroad, has made a compound of sawdust, coal tar compounds, and sulphur, which he proposes to burn in a shut iron stove having a perforated cover. This is the same in principle and in respect to results as the McDougall disinfectant, which consists of carbolic acid and sulphite of lime. As carbolic acid and the coal tar compounds are not deodorant, but merely substitute one bad odour for another, it is very desirable to combine sulphurous acid with them. That carbolic acid is not deodorant is evident enough from the experiments of Angus Smith and Crookes. The latter observes, "Carbolic acid has scarcely any action on fetid gases; but it attacks the cause which produces them, and, at the same time, puts the organic matters in such a state that it never re-acquires its tendency to putrefy."

Mr. Crookes has made a number of elaborate experiments to determine the mode of action of carbolic and cresylic acids. In the first place he demonstrates that these acids preserve meat perfectly; one per cent. of an aqueous solution of carbolic acid preserved a piece of meat for ten weeks, at the end of which time it was stewed and eaten with condiments, and could not be distinguished from fresh meat except by a faint flavour of carbolic acid. Angus Smith shows that of the two acids, the cresylic is a rather better preservative of fresh meat than carbolic. Mr. Crookes next demonstrates that these antiseptics do not owe their efficiency to their power of coagulating albumen. He ascertained that one per cent. of carbolic acid destroyed the power of yeast cells to induce fermentation, and this result was accomplished without making any alteration in these cells, which could be detected by the microscope. Carbolic acid, he next determines, does not prevent diastase converting starch into dextrine, and he therefore concludes that "it has no action on purely chemical ferments," but that "it acts by attacking vitality in some mysterious way." The last of this series of experiments determined the destructive effect of carbolic acid upon the minute organisms which accompany the process of putrefactive fermentation. He sums up the results of his very interesting and conclusive experiments and observations in the following language:—

> "The powerful action which carbolic acids exerts on the phenomena of life, is the most remarkable property which it possesses. It may be looked upon as the test proper for distinguishing vital from purely physical phenomena, and in most cases its action is characterized by the certainty and definiteness of a chemical re-agent. In the presence of carbolic acid the development of embryotic life is impossible, and before its powerful influence, all minute forms of animal life must inevitably perish."

For the information of those not familiar with the appearance and properties of carbolic and cresylic acids, we subjoin some remarks upon their chemical and physical characters.

Pure carbolic acid is a white crystalline solid which melts at 93° F. Cresylic acid is a liquid which boils at 400° F. Carbolic acid as obtained in the shops is usually in the liquid form, owing to the presence of water and some oily impurity. The common commercial carbolic acid contains cresylic also, to which fact the liquid state of the preparation is sometimes due, but for purposes of disinfection this could not be considered an adulteration, since cresylic acid is quite as effectual as carbolic. The preparation sold as carbolic acid would necessarily be much less valuable if its liquid state were due to the presence of water. "Commercial carbolic acid is soluble in from 20 to 70 parts of water." In actual practice a solution of carbolic acid may be applied to walls, floors, clothing, and the air saturated, as far as may be done, by suspending in it cloths moistened with the same solution. In Mr. Crookes' very striking clinical experiments upon cattle plague, fumigations of sulphurous acid were combined with the use of carbolic acid in the manner above indicated. His success during this very destructive pestilence in preventing attacks of exposed animals by destroying the septic germs, affords us great encouragement to apply the same measures for the arrest of similar human epidemics. Surely, it is much more rational to employ those agents as disinfectants which attack the living germs, the special virus, the *materies morbi*, rather than those which expend their activity upon noxious gases merely.

III. *Agents that physically restrain the action of the noxious compound, whereby its poisonous properties are neutralized.*—These are neither numerous nor important. Charcoal, wood-ashes, fresh earth-mould, lime and fine coal-dust, are the chief substances of this class. Various finely divided substances have considerable power of absorbing gases, and of promoting chemical changes, but their action is chiefly a physical one—adhesion of the gases to the solid. This power is possessed in great perfection by charcoal, which absorbs large quantities of gaseous matters. This consideration has led Dr. Squibb into rather extravagant laudation, as we believe, of his favourite compound (calx powder). We find in Herbert Barker's essay some experimental demonstrations well calculated to cool the zeal of the advocates of Squibb's compound. We are convinced of the general accuracy of Dr. Barker's statements by some observations of our own. It will suffice to state the conclusions of the author of the "Hastings Prize Essay" without wearying the reader with an account of the experiments in detail.

> "With regard to the above series we learn, as the experiments in the first series have already indicated, that charcoal used quite fresh possesses a very limited deodorizing power in comparison with other substances. * * * I afterwards, on June 23d, in order to be quite satisfied, placed two pounds of intestine in roughly powdered charcoal, and another two pounds in powdered charcoal, changing it every day. The result was that decomposition proceeded without interruption, and the intestines were very offensive on the fourth day."

Dr. Barker thus states the results of another series of experiments.

> "This series of experiments also shows that fresh earth mould possesses rather less power as a deodorizer than charcoal. It further indicates that wood-ashes possesses a very decided deodorizing property, being in fact but little inferior to carbolic acid. Lastly, for some days, saw-dust alone acts exceedingly well; but putrefaction when it once commences in saw-dust is developed with great rapidity."

In the absence of more effective agents it would certainly be proper to use the articles of this class; but it should be remembered that they only hold inactive and do not destroy, the noxious matters.

The report of the Metropolitan Board, which we have received since writing the above, shows how much may be accomplished by an intelligent and diligent use of disinfectants, in preventing the spread of a cholera epidemic. We are, therefore, glad to avail ourself of the important results achieved, in illustration of the principles of disinfection as set forth in the preceding pages.

The New York Board of Health have reduced the practice of disinfection to a system. They established a "Disinfectant Depot and Laboratory," where the preparation of disinfectants and experiments upon their uses were carried on under competent direction. The depot was provided with trained men and horses and wagons. Whenever a case of cholera appeared in an infected district, the disinfectants were quickly dispatched to that point, and applied in the most thorough manner.

> "The process of disinfection," according to Dr. E. B. Dalton, sanitary superintendent, "consisted in putting sulphate of iron either in saturated solution, or dry if used in wet places, in privies, in all vessels containing dejections from the bowels, and in all places where such dejections had been deposited. * * * All bedding and clothing soiled or used by the patient was boiled in a solution of permanganate of potassa, of the strength of one ounce to five gallons of water for two hours, and then removed and reboiled in pure water. For purifying the

atmosphere of the room without incommoding the patient, chlorine was gradually set free by adding sulphuric acid to a mixture of binoxide of manganese and chloride of sodium."

"The plan of disinfection, already described, has given entire satisfaction, as regards the dejections, clothing, and other immediate surroundings of the patient, but frequently the recurrence of successive cases in tenement houses, showed that the power of such cases was too limited, and at an early date general fumigation of such buildings was resorted to, either with chlorine or sulphuric acid gas. The process was this: All tenants were removed from the house, being allowed to take out nothing more than the clothing then upon them. All the windows and chimneys were closed. The gas was then set free in quantity—if chlorine, by the addition of sulphuric acid to chloride of lime; if sulphurous acid, by the burning of sulphur in large open pans, supported by long iron legs. The men employed commenced the process on the upper floors, and descended, leaving the pans in operation on the different floors, and finally closed the street door—the house thus filled with gas was left undisturbed for from eight to twelve hours. It was then opened, freely aired, and the tenants allowed to re-occupy. The first house treated in this manner was an emigrant hotel, in the lower part of State Street. Three cases of cholera occurred in this house within a period of thirty-six hours, and a large number of the boarders were attacked about the same time with diarrhœa. The proprietors were notified that all guests must leave and the hotel be closed. This was promptly done. The house was then thoroughly fumigated with chlorine, and kept so for twenty-four hours, when it was opened and aired. It was then cleansed throughout and the walls fresh whitewashed. At the end of ten days the hotel was re-opened and very soon crowded with lodgers. No case of cholera or other disease of any moment has occurred there since. Subsequently to that, a large number of houses were fumigated, after cholera had occurred in them. Sometimes chlorine was the agent, and at others sulphurous acid. They have proven equally satisfactory, though in far the largest number the latter was used. In the great majority of instances, fumigation has been followed by immunity from the disease. In a few, however, cases have occurred subsequently to the process, but they have seemed the result of renewed exciting causes." (p. 22, Appendix.)

The facts which we have presented in this review, and the numerous striking instances of the power of disinfectants, contained in the works before us, but which would have occupied too much space to detail, are conclusive as to the value of these agents in the prevention of disease. Notwithstanding this, it must also be admitted, that our knowledge of the practice of disinfection is yet incomplete in many respects, but chiefly, in respect to the power of these agents to destroy septic germs. It is very desirable that this important branch of the subject be pursued by those competent to conduct such investigations. A field of research, vast in extent, is here open to those willing and able to cultivate it, and discoverers in it will be considered benefactors of their race. It is vastly more important, as we all know, to be able to prevent disease than to cure it. He who teaches us to prevent an epidemic or contagious disease by disinfectants deserves to rank with JENNER, in the estimation of mankind.

R. B.

ART. XVII.—*Clinique Médicale sur les Maladies des Femmes.* Par M. GUSTAVE BERNUTZ, Médecin de la Pitié; et M. ERNEST GOUPIL, Médecin de l'Hôpital de Lourcine. Tome premier. Paris, 1860; tome deuxième, 1862.

Clinical Memoirs upon Diseases of Women. By M. GUSTAVE BERNUTZ, and M. ERNEST GOUPIL. Vol. I. pp. 610; vol. II. pp. 771.

The same translated and edited by ALFRED MEADOWS, M. D. New Sydenham Society, London, 1866. Vol. I. pp. 276; Vol. II. pp.

IN the year 1816, Recamier revived the use of the *uterine speculum*—(*revived* such use, for without delaying to consult the evidence of Ambrose Paré and of Scultetus, the ruins of Pompeii and the records of Galen seem to establish a high antiquity for this instrument)—and the succeeding half century has been marked by extraordinary progress in uterine pathology and therepeutics. This truth may be admitted with equal readiness whether with the *Ultraists* we see in the speculum the great cause of such progress; or, with the *Citraists*, regard it only as having stimulated investigation, contributing but little to the facility and value of such study; or, to present a final contingency, we consider this acknowledged progress as simply an advance *pari passu* with other departments of medicine, and resulting from the concurrent influences of various causes.

The literature of diseases of women now constitutes no meagre library of occasional and isolated volumes; each year brings an increase in number and variety of contributions, and he who would be familiar with them all must be a most industrious and constant student.

But were a statement required as to what these numerous volumes "principally teach," what uniformity of pathological creed and therapeutical practice their authors hold, one is almost tempted at times to exclaim, *Quot homines, tot sententiæ!* He is fortunate who, in the midst of voices often discordant, and of testimonies frequently contradictory, preserves an intelligent faith in a few fundamental truths already known, and many more awaiting discovery; otherwise, from his hasty credulity, he may lapse into utter scepticism, for these, while *opposites*, are at the same time *proximates*, just as the license of civil anarchy is but the prelude to the stern rigor of despotism.

Uniformity of opinion is the calm of utter stagnation, or else the tribute to a completed science; men agree either when they do not think at all, or else when conjecture and speculative reason are lost in positive knowledge. Gynæcology is neither a stagnant pool nor a finished edifice; that which has been accomplished is in itself great, but in comparison with that which remains to be done, is exceedingly small. While then the Pillars of Hercules are yet a great way off, so far that neither this nor any succeeding generation of mortals can reasonably hope to behold them, there must be differences of opinion among the pioneers who endeavour to map the way which leads thither.

Illustrations of these diversities and contrarieties of opinion can be readily found. * * * Nevertheless, notwithstanding the ceaseless flow and ebb of different pathological views, and the clashing of opposite and discordant opinions, there is a constant current whose force bears us on to a larger and clearer knowledge of female diseases—a current flowing, not from a single source, but from many fountains, and a force which is the resultant of many forces. The day has gone by when any exclusive and ultra creed can reign supreme in this domain. The extravagant laudations, for example, of the uterine speculum by its enthusiastic friends which we heard a few years ago are hushed alike with the fierce denunciations of those hostile to its use; we well know that the field of uterine pathology embraces a vastly larger area than a Fergusson's speculum can inclose, and equally well we know the value of this instrument in the diagnosis and treatment of a limited number of diseases peculiar to women.[1] Guerin has some excellent observations in reference to the undue importance which has been attached to this instrument, and to lesions of the uterine neck—observations as it seems to us of such value, that a few of them we transcribe, furnishing alike the proof, the cause, and the correction of an error into which some practitioners not unseldom have fallen; and the views of this eminent teacher will be found to correspond quite well with those of MM. Bernutz and Goupil, upon the consideration of whose volumes we shall enter in a moment.

> "As the human mind has a great tendency to assign effects to causes which it can readily appreciate, the pains which women so frequently experience in their loins and abdomen have generally been attributed to a lesion of the uterine neck. Although metritis and phlegmons of the large ligaments may not be unknown by all the world, it is, in the vast majority of cases, ulceration of the neck which is invoked to explain the sufferings of women.
>
> "This ulceration answers to all: pains of the stomach, of the kidneys, dyspepsia, hysteria, nervous affections of all sorts—everything is explained by an excoriation of the uterine neck. After having examined many thousands of women, I think myself right in affirming—
>
> "First. That these ulcerations cannot cause the pains which have been attributed to them.
>
> Second. That these pains are caused, in a very large majority of cases, by phlegmonous inflammation of the large ligament, by an ovaritis, a pelvi-peritonitis, or by a hæmatocele; or, finally, by an intestinal lesion to which the physician gives no farther thought when he has discovered an ulceration, however slight, of the neck. * * *
>
> "Since the invention of the speculum it has been thought that this instrument would permit the physician to dispense with every other method of exploration, an opinion which is almost certain to lead into error. What indeed can we discover with the speculum? The mucous membrane of the vagina and the neck of the womb. We can distinguish the color of these parts, ascertain the volume of the neck and the ulceration of which it may be the seat. But if a vaginitis cannot escape this investigation, it is quite evident that we are but little advanced towards the diagnosis of diseases of the womb when we have discovered that the os is larger than normal, and that it is red and ulcerated.
>
> "Except in case of a cancerous ulceration, I do not think that one can by means of the speculum give a positive opinion as to the cause of the pain for which he is generally consulted. The touch is, in my opinion, an infinitely more valuable means of diagnosis."

Addressing ourselves now to the work of MM. Bernutz and Goupil, we find that the former is the chief author, but little more than one-fourth of the thirteen hundred pages which the two volumes contain being the labour of the latter. Goupil died in September, 1864, and his early death was no small loss to medical science. Bernutz is in the prime of manhood, and his contributions to the *Nouveau Dictionnaire de Médecine et de Chirurgie Pratiques*, of which the sixth volume has just been issued, are exceedingly valuable; and we venture the assertion that these Clinical Memoirs constitute the most important advance made in gynaecology within a score of years.

---

[1] Maladies des Organes Genitaux Externes de la Femme. Paris, 1864.

The introduction, which is by Bernutz, indicates very fully the scope of the work, methods of study, &c. It is not designed to be a dogmatic treatise upon female diseases; such a work with our present knowledge seemed to the author impossible.

> "I thought it necessary to study clinically each of the functional diseases of the genital organs in order to know their different causes, and to deduce from actual observation their symptomatology. I was then young, and did not consider the innumerable difficulties which would occur at each step, and which to-day, after so many years of labour, compel me to avow that I am far from being able to describe all the diseases of women, and that no one else can."

M. Bernutz refers to his long-continued and constant labour, assisted by friends and pupils, and especially by M. Goupil, first his *interne*, and then during two consecutive years engaged with him at the Hôpital Lourcine, a labour that taught him how little he knew in comparison with that remaining to be studied, or knew but too superficially to be able to present in a satisfactory manner.

We may well pause a moment at these frank avowals of such partial knowledge; for surely there might be found scores of men who would scarce confess even to themselves attainments so imperfect, and who would not be balked in their ambitious projects by similar reflections!

To "get up" a complete work on *Female Diseases* is quite on a level with moderate abilities—only some patience of industry and skill of art required; taking a fragment from this, and another from that author, hence a stone and thence another—fitting and fastening them together by paragraphs and by chapters, and the occasional introduction of the conscious "I," and some original barbarisms of nomenclature—and lo! the curious mosaic is done.

In these volumes, however, we have embodied the intelligent and industrious labour of many years, executed too with all the facilities for insuring its success and completeness, and after all but a portion of female maladies is discussed.

But without dwelling longer on this point, we proceed to mention the subjects treated of, and their order.

> "In a work of this kind it seemed to me necessary to commence by the study of that functional trouble which is comparatively the simplest of all, to wit, disturbance of menstrual *excretion*,[1] and this selection was confirmed because it

---

[1] "I may perhaps be allowed to explain the meaning which the authors attach to the terms 'secretion' and 'excretion,' as they are frequently used in these pages, and scarcely in the way we are accustomed to in this country. With us they are sometimes used synonymously; the urine, for instance, is at one time a secretion, and at another an excretion. Generally we call that an excretion the separation of which from the blood is essential to the maintenance of life, while those products which are separated for some ulterior purpose, as milk, saliva, etc., are called secretions. Not so, MM. Bernutz, and Goupil: in reference to menstruation, the product itself, they designate by neither term; the act of separation from the uterine glands and vessels they call the menstrual secretion, and its further escape from the uterine and vaginal canals, they term the menstrual excretion. So that in both cases it is not the product, but the escape of that product that is called after these terms."—*Extract from Dr. Meadows' Preface.*

Now this is all very well except the implication that such use of the terms "secretion" and "excretion" is peculiar to the authors. That it is not thus peculiar, the following extract from the second volume of the *Bibliothèque du Médecin-Prac-*

furnished us a point of departure a typical morbid tableau accepted as true by all pathologists."—*Introduction.*

Consequent upon failure of menstrual excretion, *hæmatocele* may occur; hence this is the next subject discussed. Now hæmatocele, though not a disease—only a symptom—is in itself complex; it may occur not only in the non-pregnant, but also in the pregnant condition; in the latter case usually as a consequence of extra-uterine pregnancy. The hæmatocele, whatever its origin, can cause inflammation of the pelvic peritoneum—*pelvi-peritonitis*—a disease which presents itself at every step of gynæcology, and a knowledge of which precedes that of the other female genital affections, as, at the commencement of the present century, the study of pleurisy did that of pulmonary affections. In the study of pelvi-peritonitis we learn that it very frequently is otherwise originated than by hæmatocele—*e. g.*, from a morbid condition, generally inflammatory, of some one of the sexual organs. Finally, uterine displacements are directly connected with pelvi-peritonitis, and the study of these deviations concludes the second volume.

From this general view of the scope and character of the work, we proceed to the examination of its contents in detail.

In order that menstruation may take place normally, the concurrence of several phenomena is essential; among these are active congestion of the genital organs, and the application of the fringed extremity of the Fallopian tube to some portion of the corresponding ovary; sometimes, indeed, there is an actual union by means of a thin transparent membrane—dilatation of the orifices, and especially of the uterine neck. Under the influence of what is called physiological teaching, physicians are occupied almost entirely with this congestion alone, which to them if not the first stage of inflammation, is but a step from it. Although there may be inflammation of the uterus, and especially of its appendages, and reaction of this upon the pelvic peritoneum, when congestion deviates from its normal type; and though, consequent upon the same deviation, there may be phlegmonous inflammation of the large ligaments, yet these restrictions being made, the morbid congestion or inflammation, in a large majority of cases, is secondary to a failure of excretion of the menstrual fluid, and ought to be attributed to the action of the retained liquid, and the reaction of the organs which strive to expel it. Where the menstrual fluid cannot effect its natural exit from the uterine cavity, it distends that cavity more and more, and also the Fallopian tubes; the uterus, in consequence of the thickness of its walls and their contractility, partly resists the distending force, and compels the incompressible liquid into the tubes. Thus this second period of menstrual retention causes symptoms closely resembling phlegmons of the large ligaments, and the resemblance is increased by the fact that inflammation may result from this tubal distension. Still further, it is easy to understand that when the union between the tube and ovary is slight, it may be ruptured, and the catamenial fluid pass *into the abdominal cavity* from the distended tube and uterus—the effusion there giving rise to a peritonitis, oftenest local, but sometimes general. But when this

---

ticien, Paris, 1844, sufficiently shows: La menstruation est une fonction d'élimination, de sécrétion; elle peut donc faire défaut dans deux circonstances distinctes: elle n'aura pas lieu lorsque l'exhalation du liquide menstrual ne s'effectuera pas, ou lorsque l'excretion de ce liquide sera empêchée. Cette importante considération nous amène à diviser l'aménorrhée en deux grandes sections. A. *Aménorrhée par défaut d'exhalation ou de sécrétion.* B. *Aménorrhée par defaut d'excrétion.*

solution of continuity does not occur, or when but a partial peritonitis has resulted, by and by the congestion diminishes, and there supervenes a new series of phenomena due to the changes in the liquids, and in the natural or accidental cavities which contain them. Among these morbid phenomena are, 1st, blood concretions, dropsies of the uterus and of the tubes, or tubo-ovarian cysts, as immediate results of menstrual retention; and, 2d, metritis, phlegmons of the broad ligaments and of the iliac fossæ as indirect results.

The first case recorded by M. Bernutz, occurred in 1844, at the Hôpital Saint-Antoine, in the practice of M. Piedagnel, whose *interne* he then was; and it is peculiarly interesting as having been the starting-point of the special studies and investigations which have engaged him for more than twenty years. The case is briefly this: The patient was forty years of age, married, had had seven pregnancies, the first five of which terminated in miscarriages, the last two in delivery at the full term. Version was resorted to in the final labour, which was about three years before her entrance to the hospital. At a menstrual period when the excretion did not take place, she experienced uterine pains similar to those of labour, which gradually diminished, but then recovered all their intensity at the next period when the menstrual evacuation should have taken place. During this time, while in a bath, and after a most violent pain, a blood-clot was expelled, and a slight bloody discharge succeeded; and then for nearly a month, up to the date of her admission into the hospital, she had a constant though small discharge of blood, mingled with sanious matter. Upon examination the chief local signs discovered were enlargement and displacement of the uterus, and a three-lobed tumour, exceedingly painful to pressure, occupying all the lower part of the abdomen. In less than three weeks the patient died from peritonitis, and a post-mortem revealed, among other pathological conditions, the right tube distended with blood, the left with blood-clots, and a very large blood-clot occurring in three cysts in the pelvic cavity.

Here we have an hypertrophied or inflamed cervix-uteri preventing the menstrual, just as enlargement of the prostate prevents the urinary flow; the obstructed fluid finding its way into the abdominal cavity successive times, causing hæmatoceles, and giving rise to successive attacks of peritonitis, the last one proving fatal.

Since the observations of Ruysch, the fact that the menstrual fluid may find its way through a Fallopian tube into the peritoneal cavity, has acquired the right of scientific domicile, and been conceded by physicians and anatomists of the first order.

As obstructed menstruation may be followed by the terrible consequences recorded in the case given above, the study of the various obstructions, whether congenital or acquired, whether complete or partial, is of no little importance. These obstructions are considered under eight heads, to wit:—

1. The menstrual excretion may be prevented by an imperforate state of the vulvo-uterine canal, either congenital or acquired before puberty.
2. By cicatrices which, subsequently to puberty, may render this passage impermeable.
3. By contractions, congenital or cicatricial, of the vagina or of the cervix uteri.
4. By increased volume of the uterus.
5. In the fifth variety the excretion is temporarily prevented by the ob-

struction of the cervical canal with accidental products either developed there or in the uterine cavity—polypus, membranous dysmenorrhœa.

6. Uterine deviations, especially flexions.

7. Spasmodic contraction of the uterine neck.

8. In the eighth variety, less known than any of the others, the functional disorder is produced by an abnormal state, either congenital or acquired, of the Fallopian tubes.

Illustrative cases of these different varieties are given, and many discussed at much length. Among the illustrations under the second head, some of the most interesting are those of occlusion of the os uteri from cauterization, from amputation of the cervix, from gangrene of the vagina, and from difficult premature labour.

In reference to that variety of dysmenorrhœa for which Mackintosh used bougies, and Prof. Simpson and his followers have used the *hysterotome* with such freedom, M. Bernutz states that it has been received with great reserve in France, and the operation proposed to remedy it with still greater reserve. And he very justly adds—and this is a point of which possibly those who are favourable to the operation sometimes lose sight—that the fact of benefit resulting from division of the cervical canal does not prove that the dysmenorrhœa was mechanical; it might have been spasmodic or congestive, and yet be thus benefited.

Under the fifth variety the author devotes several pages to the consideration of *membranous dysmenorrhœa*, the main points of which are that this is not a disease, but only an epiphenomenon of uterine catarrh, and that treatment in the intervals should be devoted to the cure of this.

> "This last indication is the chief one, but also the most difficult to meet, because uterine catarrh, when chronic, is, in the vast majority of cases, a diathetic manifestation, very often scrofulous, which can be so much less easily remedied, as the patient is at the same time very frequently a prey to anæmia, which is in itself a cause of uterine catarrh."

In speaking of the seventh variety, M. Bernutz uses the following language:—

> "Hysterical dysmenorrhœa is not rare, and even in some cases it is the first manifestation of hysteria; but I ought to say that this peculiar nervous manifestation of uterine trouble does not authorize the opinion of certain pathologists, among whom it is astonishing to find Scanzoni, who regard the uterus as the seat of hysteria. This malady cannot be localized; it is, as every other malady, an affection *totius substantiæ*, an abnormal physiological state which modifies all the acts of the organism, a pathological condition of life which, as its peculiar character manifests itself by dynamic disturbances, sometimes of one, sometimes of another function, and consequently can manifest itself by functional derangements of the genital organs without our accusing the uterus of disorders of which it is evidently innocent."

Space is wanting to present the author's *symptomatology* of these various forms of menstrual retention; indeed, even the *diagnosis* and the *treatment* must be only briefly referred to.

Among the errors of diagnosis have been mistaking this disorder for commencing pregnancy and uterine cancer; the latter has been committed by such illustrious men as Chassaignac, Nélaton, and even by Bernutz himself. Besides, the hæmatocele consequent upon menstrual obstruction has been mistaken for uterine fibroid, for ovarian cysts, and purulent cysts of the iliac fossa; the first error was committed in one instance by Malgaigne, and in another by Professor Stoltz, of Strasburg, whose case had furnished him previously with material for several lectures upon fibrous tumours of the uterus: peradventure the record of hospital clinics elsewhere might occasionally furnish examples of lectures upon supposititious diseases.

As to *treatment*, each case has its own special character. Sometimes it is necessary to address ourselves at first to the obstacle preventing excretion; sometimes, on the other hand, before combating it, it is requisite to endeavour to remove the morbid state which has supervened upon the functional trouble, and which determines its persistence. This fact permits the division of menstrual retention into surgical and medical.

> "Nevertheless such a division is not advisable, as it divides the history of a single affection, and because it is necessary, in opposition to the programme of Scanzoni, who wishes to make gynæcologists a sort of variety of dentists, to endeavour to fuse the different branches of the art of curing, an art that does not countenance deceptive specializations which only strangers to medicine can dream of, and which are essentially prejudicial to patients."

Where the menstrual retention is caused by complete obliteration, congenital or acquired, of the vulvo-uterine canal, of course requiring surgical interference, the opportune moment for operation is when the genital organs are in the greatest possible inertia: therefore wait for eight or ten days after "a monthly period." Let the puncture, in case of imperforate hymen, or os uteri, be small, so that the escape of the contents may be gradual; for otherwise, contraction of the Fallopian tubes and expulsion of their contents into the peritoneal cavity may be induced; also to prevent the rapid emptying of the womb, all pressure upon the abdomen should be carefully avoided. Nor is it advisable to keep a catheter in the artificial opening—better repeat the punctures until the evacuation of the greater part of the retained blood is effected, then free incision of the obstruction, and the employment of dilating means to insure its patency.

We must omit following our author in his treatment of those cases of absence of the vagina or of fibrous coarctations of this canal, simply remarking that he prefers cutting a passage with the bistoury where the vagina is obliterated by a fibro-cellular tissue; but when this passage is entirely absent, the operation of Amussat is regarded as better, viz., separating the bladder and rectum by means of the finger, the operation being performed at successive periods, and a sponge tent being kept, during the intervals, in the opening thus made. In this connection we cannot help commending an excellent monograph[1] recently issued by Dr. Thos. Addis Emmet.

In case of stricture of the cervical canal preventing free excretion, no operation to obviate the physical obstacle should be attempted during the flow, but wait for the incomplete inertia which succeeds the periodic excitement. Congestion will frequently be found as a consequence of cervical narrowing, and is itself then a cause of deficient excretion: this is to be remedied by leeching, four or five leeches either to the neck or in one of the vaginal cul-de-sacs, a warm bath, and then warm emollient applications over the abdomen with absolute repose. When the flow does not take place readily, the turgescence of the cervix having been relieved by the means previously indicated, recourse should be had to those agents which render regular the efforts of the uterus which are ineffectual because disordered. Ergot seems to be most clearly indicated; but the increase of the flow produced by it is often attended with very severe pain. The author, therefore, prefers *artemisia vulgaris*, rue, savine, or saffron, which may be administered internally or locally, or both; for internal administration they should be in the form of warm infusions, and sometimes it is advisable to add to the infusion opium and ether, to combat the nervous *erethism* to which the patients are subject.

---

[1] Accidental and Congenital Atresiæ of the Vagina, with a Mode of Operating for successfully establishing the Canal.

Bernutz states that it is very rare to find narrowing of the uterine orifice as the efficient cause of difficult menstruation, and of course equally rare to find a case requiring an operation, and that he has never had occasion to perform it;[1] where mechanical means are required, he would prefer incision to dilatation. In the fourth species of menstrual retention, that dependent upon engorgement of the cervix uteri, and in its acute stage, the same general indications of medical treatment are to be observed.

In the treatment during the intervals, we should remember that these tumefactions of the neck, although in the majority of cases an inflammatory condition, are nevertheless either directly or indirectly the expression of a diathetic malady, oftener scrofulous than any other; hence the value in many cases of the preparations of iodine, and of sulphur in certain cases, in others of arsenical or alkaline preparations, of sea, or of warm baths, especially those of *Saint Sauveur*.[2] Baths, either simple or medicated, according to the indications, should be frequently advised.

"To this prescription of frequent baths, I conjoin that of the preparations of conium, especially the conicine[3] pills of Guillermont. I strongly advise conium because this therapeutic agent seems to me the opium of the genital organs (sexual organs, mammary glands), and to act in all the affections of these organs, cancerous or other, in a similar way, as a special narcotic which promotes resolution, when possible, in diminishing the congestion consequent upon pain." Besides these different means it is necessary to use local agents for the catarrhal affection which has been either the point of departure of the engorgement of the neck, or which has supervened upon it under the same diathetic influence, and of which the persistence maintains an alteration of uterine nutrition. The details of this treatment will be given, the author promises, in a memoir upon uterine catarrh; in which also will be considered the special therapeutical means required in the dysmenorrhœas comprising the fifth and sixth varieties of menstrual retention.

In the treatment of nervous dysmenorrhœa, which so often drives both physician and patients to despair, it is necessary first of all to determine whether the painful functional disorder is a symptomatic expression, and if then it is connected with anæmia, with chlorosis, or with hysteria; or if on the other hand, it constitutes a special neurosis, like asthma, because in the former cases the disease of which the dysmenorrhœa is but a symptom will rule the therapeutics.

---

[1] This experience is in striking contrast with that of some American and British surgeons.

[2] This is a village of the Hautes-Pyrénées, occupying a pleasant position in the valley of *Luz*, at a distance of a mile and a half, northward, from the town of that name, and at an elevation of 2,500 feet above the level of the sea. The water of its mineral spring contains sulphuret of sodium, chloride of sodium, sulphate of soda, silica, caustic soda, and a trace of caustic potash, magnesia, ammonia, and *baregine*.—*Medical Climatology*, Dr. SCORESBY JACKSON.

[3] Dr. Meadows' translation, "pill of conium of Guillermont." The original is "*pilules de conicine*." Guillermont's (Guillermond's ?) pills are made with the seeds of conium; but with seeds a portion of which has been tested to determine the quantity of conicine they contain, and the weight of the pill varies with the relative richness in this peculiar alkaloid of each specimen: hence these preparations are of uniform strength.—*Manuel de Matière Médicale, &c.* BOUCHARDAT. Paris, 1864.

The second memoir by M. Bernutz is entitled *Peri-Uterine Hæmatocele, and its Varieties.*

It is scarcely necessary even to allude to the first two or three pages of this *memoir*, devoted as they are to an establishment of the author's claims not to the discovery of hæmatocele, but to having given to that discovery its true value, and having made investigations that have served as the point of departure for all recent works upon this subject, though these claims had been ignored by Nélaton in his *Surgical Pathology.* We can well omit all this, as the verdict of the profession is, and we use the words of Dr. Graily Hewitt (*Diseases of Women*, London, 1863), that "the claims of Bernutz to be considered as the first modern observer and expounder of this pathological condition stand before all others."

It is important to remember in the study of hæmatoceles, that the product of the hemorrhage isolated from the pathological cause which has produced it, should not be regarded as a disease; the unfortunate blood-clot no more merits the name of a malady, than does hæmoptysis or epistaxis.

Equally important is it for the practitioner to bear in mind that hæmatocele is not of exceedingly rare occurrence, if we accept the statements of some leading recent authorities.

> "From[1] my own observations I am satisfied that hæmatocele though not common is certainly by no means so rare an affection or symptom as is generally supposed, nor, in many cases, is the diagnosis a matter of much difficulty. The careful study of the history of those affections which eventuate in hæmatocele, as well as of the co-incident symptoms, is of more value I believe in diagnosis than even vaginal examination."
>
> "This[2] lesion is not of extreme rarity; nevertheless, it has only recently been brought to light, and assigned a definite place in the catalogue of female complaints; and although much has already been done towards elucidating its pathology, much yet remains to be done.
>
> "The whole subject possesses not only novelty but very deep interest, from its high degree of importance."

In a monograph upon *Dysmenorrhœa*, found in the London Obstetrical Society's Transactions for 1865, by Dr. Robert Barnes, the eminent author uses the following language:—

> "A secondary consequence—I am persuaded not an infrequent one—is an oozing of blood from the abdominal end of the Fallopian tube and from the surface of the congested ovaries. This is a form of retro-uterine hæmatocele of which I have seen several instances in young girls."
>
> "Although[3] these tumours are almost unnoticed in classic works, they are not very uncommon."

Dr. Day[4] speaks of it as "this almost common affection." These authorities are sufficient, without quoting a line from Bernutz, to show that this affection is not of very rare occurrence; and possibly the practitioner of large experience who avows he has never met with it, might upon careful reflection adopt the language of Dr. McClintock (op. cit.):—

---

[1] Dr. Meadows' Preface.

[2] Clinical Memoirs on Diseases of Women. By Dr. Alfred H. McClintock. Dublin, 1863.

[3] Uterine and Ovarian Inflammation. By Dr. Tilt. 3d edition. London, 1862.

[4] Clinical Histories with Comments. London, 1866.

> "Indeed I can call to mind a few cases occurring in my own practice, which at the time were obscure and perplexing, but which, I have now little doubt, were examples of pelvic hæmatocele, and upon this supposition only can I explain their course and symptoms."

Two or three causes embarrass the study of hæmatoceles. One is the various terminology of different writers. Thus many of the French authors, and some of the English, give these effusions the designation of *retro-uterine*, even situated in front or laterally with reference to the uterus, as well as behind it. Dr. McClintock, as we see, terms it *pelvic*, reserving the epithet *uterine* to characterize blood effusions into the substance of the uterus. Bernutz confines the term hæmatocele to intra-peritoneal effusion of blood occurring in the non-pregnant state, designating as thrombus the extra-peritoneal effusions. Nélaton, Voisin, Prof. Simpson, and some others, do not observe these distinctions; and thus group together affections that are separate in their pathology.

It probably would be best to follow the nomenclature as well as the pathological distinction of Bernutz.

Our author divides hæmatoceles as follows:—

1. Those symptomatic of utero-tubar varices. Of this division he gives three examples, one of which occurred in the practice of Goupil and himself.

2. Hæmatoceles from hemorrhagic pelvi-peritonitis.

Two illustrations are given where the hemorrhage, in each case fatal, could be attributed to excessive coitus. But the author rests this variety of the affection upon pathological analogy; thus other serous membranes, as the arachnoid, the pleura, the pericardium, even the abdominal peritoneum, may be the seat of a blood exhalation; why not therefore the pelvic peritoneum as well?

3. Hæmatocele symptomatic of a rupture of the ovary or Fallopian tube.
4. Hæmatoceles symptomatic of obstructed menstrual excretion.
5. Metrorrhagic hæmatoceles.

> "I unite in this fifth and last species all the intra-pelvic hemorrhages which in the non-pregnant state, result from a morbid discharge, either affecting all the genital organs, or limited to a certain number of them, one portion of the discharge being accidentally effused into the peritoneum, and the other passing by the vulva and constituting a more or less abundant metrorrhagia."

M. Bernutz dwells upon the importance of not regarding the pelvic effusion as the disease in this variety more than in any of the others; and he criticizes, justly we believe, the designation which Trousseau has given it of "*catamenial* hæmatocele," by which he wished to indicate that the genesis of these effusions, that appear as an accidental epiphenomenon of metrorrhagias, is intimately related to menstruation.

Of course the treatment of these affections will be mainly determined by the causes, and by the results. Many of the former have already been sufficiently noticed in our review, while the latter will be glanced at in the memoir devoted to *Pelvi-Peritonitis*. In the acute stage, stop the hemorrhage; and for this end opium, cold acid drinks, cold to the abdomen, may be used.

> "In the metrorrhagic variety, when the first period has passed without mischief," we quote Dr. Meadows' translation, "we must give iron, use the wet sheet, and good diet, and every third day from half a drachm to a drachm of quinia. M. Trousseau thinks this a specific. I cannot agree in this, though I

do believe it to be the most suitable drug in the anæmic cachexia peculiar to women with metrorrhagic hæmatocele."

A word in regard to the quinia prescription. From thirty to sixty grains of quinia in a day would be considered somewhat heroic practice in such cases, by either western or southern practitioners, who are not quite as much afraid of the deleterious influences of large doses of quinia as some of our eastern friends! It is to be hoped that Dr. Meadows will look at the original once more before he tries these doses upon any London metrorrhagic hematoceles. Thus looking he will find the text is "2 *à* 4 *grammes de poudre de quinquina royal,*" in other words, from thirty-six to seventy-two grains of powdered yellow bark.

The third memoir is the work of Goupil, and is devoted to the study of *Intra-Pelvic Hemorrhage occurring in Extra-Uterine Pregnancies.*

The sources of hemorrhage in these cases may be—1, rupture of dilated ovarian veins; 2, rupture of the ovary; 3, rupture of the Fallopian tube; 4, rupture of the cyst; 5, the interior of the cyst itself.

The diagnosis is that of pregnancy, conjoined with the detection of a tumour exterior to the womb. Generally death occurs in a few hours or days after the commencement of the hemorrhage, and though delayed in one case here reported, such delay is altogether exceptional.

The most important parts of the treatment are rest in the horizontal position, and opium freely given, possibly for its hæmostatic power, at any rate for the relief of pain. In general, as in the hæmatoceles of the non-pregnant state, surgical interference is not advisable.

The fourth memoir is by Bernutz, and is devoted to *Pelvi-Peritonitis.*

Quite within the memory of some of the younger members of the profession pelvic cellulitis first found general acceptation in the catalogue of female diseases. Churchill, Simpson, West, not to mention many other British writers, made important contributions to our knowledge of this disease, until almost every physician met more or less often with the malady both in the puerperal and in the non-puerperal state; while he who confessed to never having seen a case would be regarded as not quite "up" with the progress of medicine. But if we accept the teaching of M. Bernutz, pelvic cellulitis is a vanishing quantity in the mathematics of female disorders.

Hemorrhagic pelvi-peritonitis having been studied in the previous memoirs, here we have presented to us sero-albuminous, or purulent inflammation of the pelvic peritoneum. These are almost always symptomatic of an affection of one of the internal genital organs, which causes inflammation of the pelvic serous membrane either by contiguity or continuity, but which, notwithstanding this important *role*, oftenest passes unperceived during life, because the symptoms of the partial peritonitis are much more marked than the peculiar signs of the genital affection which has given origin to it. Pelvi-peritonitis is the most prominent element of quite a large nosological group, in which are comprised the most interesting, but also the most obscure, affections of gynæcology. The appreciation of the morbid elements that this eminently complex subject presents is as difficult as was, before the discovery of auscultation, the interpretation of the different varieties of pleurisy, to which under so many respects pelvi-peritonitis can be compared. And the ulterior progress of uterine pathology is as directly subordinate to the knowledge of this affection, as the progress of pulmonary pathology was to sufficiently complete knowledge of pleuritic inflammation.

We cannot follow our author in his anatomical description of the cellular tissue contiguous to or connected with the womb; on this, and on post-mortem examinations, he bases his argument against what English authors generally term, after Professor Simpson, pelvic cellulitis. The existence of phlegmonous inflammation of the broad ligaments he admits.

> "There is not an observer who has not seen, especially after confinement, these phlegmons of the broad ligaments, and who did not recognize the swelling so prone to suppuration with its march inevitably progressing towards the abdominal walls, or towards the deep illiac fossa; and who, finally, could not distinguish this swelling from the inflammatory tumours which have received the names of engorgements of the uterus, chronic partial metritis, and at last that of peri-uterine phlegmons. The phlegmons of the broad ligaments are situated in the cellular tissue placed at the side of the womb; they occupy the only cellular tissue there found."

Dr. Graily Hewitt (*op. cit.*), in reference to the peculiar views of our authors, uses the following language:—

> "Bernutz and Goupil take a somewhat different view of the question of pelvic inflammation from that held in this country. In the second volume of the work by these authors, recently published, will be found a full exposition of their opinions on the subject of pelvi-peritonitis; an affection which, it is their object to prove, should have an important place assigned to it. Many very valuable facts have been brought forward by these authors, and which prove that inflammation, abscess, &c., of the peritoneum covering the ovarian pouch, and the fimbriæ of the Fallopian tubes, is much more common than is believed to be the case; that in addition to puerperal causes, menstrual derangements of various kinds, blenorrhagia, venereal excesses, and traumatic causes, may lead to inflammation and purulent collections in the locality in question; and they endeavour to draw a parallel between the phenomena witnessed in the male—orchitis and hydrocele—and these inflammatory conditions of the peritoneum surrounding the extremities of the Fallopian tubes and the ovaries. They argue for an almost exclusively intra-peritoneal seat of the inflammation, the argument pursued being the same as in reference to the seat of the hemorrhage in peri-uterine hæmatocele.
>
> "With acute peritonitis of the pelvic cavity, as the result of injuries of the generative organs during delivery, after operations, &c., we have been long familiar, but these authors endeavour to show that this peritonitis, now acute, now chronic, occurs in connection with diseases of the womb, Fallopian tubes, &c., to a greater extent than was before suspected. It is impossible to disregard the weight of evidence brought forward in favour of these peculiar views; but many of the cases which are described by Bernutz and Goupil as cases of pelvi-peritonitis would certainly be considered by pathologists in this country as instances of abscess of the connective tissue beneath the peritoneum."

We certainly cannot believe that many of the cases of pelvi-peritonitis adduced by Bernutz would be considered by pathologists in Great Britain as instances of abscess of the connective tissue beneath the peritoneum. Where recovery took place, of course the seat of the disease might be disputed; but where post-mortem examinations proved the cellular tissue to be intact in most instances, and in a very few to be, compared with the peritoneum, but slightly involved, surely there is no adequate foundation for the assertion Dr. Hewitt makes.

The first case given by Bernutz is that of a patient who, twelve days after an attack of blennorrhagia affecting the urethra, vagina, and uterus, had severe pains in the lower part of the abdomen; the twentieth day entered the hospital; then had acute suffering in the hypogastric region, especially severe on the left; and by touch, a tumour, encircling three-fourths of the neck of the womb, was discovered. The patient died from pleurisy, and the autopsy revealed numerous peritoneal adhesions, anteflexion of the womb, purulent collections in the vicinity of the left ovary, and also in the right tube; left closed; the ovaries, and all the cellular tissues of the broad ligaments and of the uterus perfectly healthy.

The second case is menstrual suppression, development of a supposed peri-uterine phlegmon, during the evolution of which successive uterine displacements were produced. Death from malignant variola. Post-mortem showed uterine deviation, peritoneal adhesions between the posterior face of the uterus and the rectum; inflammation of the tubes; peri-uterine cellular tissue healthy. The third case, menstrual suppression from cold on the fifth day of the flow; almost immediately vomiting, and very acute pain occupying the lower part of the abdomen, and there slight tension; the sixth day a retro-uterine tumour, two-thirds the size of the fist, resembling in shape a haematocele, but more fluctuating; then general peritonitis, with death on the twelfth day from the suppression. Lungs and digestive organs healthy; glutinous peritoneal adhesions, and sero-purulent fluid in the abdomen; the pelvic cavity encysted by adhesions between the folds of the small intestines themselves and to the superior border of the uterus, distended with a large amount of sero-purulent fluid; purulent distension of the tubes; lining membrane of the uterus diseased, and its enlarged cavity filled with a muco-sanguinolent fluid; cellular tissue of the large ligaments of the uterus, and especially that of the utero-rectal cul-de-sac perfectly healthy.

The fourth case is one in which "gastrotomy was performed for supposed ovarian tumour, which proved to be an intestinal mass united together by adhesions." After detailing this case as recorded at the time in the *Philadelphia Medical Examiner*, M. Bernutz adds a few words in reference to it, which we transcribe:—

> "I have no reflection to add; the details speak for themselves. They establish conclusively that the intestinal convolutions, united together by old peritoneal adhesions, could so completely simulate a liquid tumour that four physicians of a great hospital thought, after thorough examination, they established from this deceptive sensation, the indication for one of the gravest operations of surgery. We do not decide whether the indication was rash or not, but simply remark that the operation commenced, and even when a free incision was made into the abdomen, the error still persisted."

Reference is then made to one of his own cases, where, during life, he believed he was treating a peri-uterine phlegmon, which proved, very much to his surprise at the autopsy, to be a tumour constituted similarly to that recorded above.

Without pursuing the reference to the cases observed or collected[1] by M. Bernutz any further, we shall proceed at once to mention the divisions made in accordance with the etiology of the division. Thus, of ninety-nine cases, forty-three were puerperal;[2] five after abortion, thirty-five after accouchement, twenty-eight blennorrhagic, twenty menstrual, eight traumatic, three consequent upon venereal excess, two during the evolution of chancres of the cervix, two after the employment of the uterine sound, and one after an ascending vaginal douche directed for a pseudo-membranous ulceration of the cervix.

---

[1] One of these is from the pen of the late Dr. John P. Harrison, and will be found recorded in the 30th number of this Journal, February, 1835. Dr. Harrison entitles it *Inflammation of the Fallopian tubes and ovaria terminating in a purulent deposit, with a fatal catastrophe.* But those who study it in the light of our author's teaching will see in it a *pelvi-peritonitis* from menstrual suppression.

[2] M. Bernutz, in his special descriptions, divides the puerperal into those following labour at full term, and in those consequent upon abortion—making thus in all five, instead of four, divisions of inflammation of the pelvic-peritoneum.

Symptomatology of Pelvi-Peritonitis:—

"Of the numerous difficulties which invest this part of the subject, some result from the fact that this disease, unless traumatic, is consecutive to an affection of one of the intra-pelvic organs; and others that it produces, in almost every case, uterine deviations. Thus complex, it is necessary in every case to discriminate what part is to be attributed to each of these morbid states, not assigning to one that which belongs to another, as is so often done with reference to uterine displacements which do not, unless in exceptional circumstances, cause pain. Pain, on the contrary, is the salient-phenomenon of pelvi-peritonitis, as it is of acute inflammation of serous membranes in general. * * * In the acute form, the patient either without precursory phenomena in the traumatic form, or after a few days of *malaise*, during which she has experienced pelvic weight, or other symptoms dependent upon that affection of the uterus, or of its appendages, which has reacted upon the peritoneum, is taken suddenly with sharp abdominal pain. The pain in each case varies in intensity and extent. Sometimes it occupies the entire hypogastric region, and irradiates thence over the abdomen; sometimes it occupies only the two iliac fossæ, sometimes but one; it renders urination and defecation painful, and causes shooting pains on the front and inside of the limb. Occasionally this pain is slight, and very rarely it is not observed. It is aggravated by movements of the limbs, coughing, deep inspiration, &c. * * * * Abdominal and vaginal explorations are excessively painful the first few days; nor are they necessary, for then neither tumour nor uterine deviation can be detected. * * * Occasionally the patient may sink in a brief time, with general suppurative peritonitis, but ordinarily the febrile action diminishes, and the abdominal pain loses its intensity. * * * A vaginal examination will discover, sometimes, a tumour in one or more of the cul-de-sacs—sometimes only a vague resistance; and finally, sometimes only pain, without the least feeling of resistance in parts where a subsequent exploration will detect a swelling. It is necessary, therefore, to repeat the examinations, and those who are commencing *à toucher*, should not, because they find one day no tumour which is apparent a day or two subsequently, doubt their sense of touch, and, in their discouragement, neglect a mode of exploration with which it is as necessary to be familiar as with auscultation. This sensation of a tumour perceived in one or more of the vaginal cul-de-sacs is so much more interesting to study, as it is, in pelvic peritonitis, the sign analogous to the flatness, or rather the defect of elasticity to percussion observed in pleurisy. Unfortunately there are, in the sensation which the touch gives, a number of slight differences which it is impossible to communicate to those who have not that special tact, without which every uterine affection is a sealed book. * * * The tumour, as the term peri-uterine indicates, is adjacent to the uterus, and in this way is distinguishable from the different enlargements, partial or general, of this organ. It is separated from it by a furrow, sometimes very distinct, at others slight; and in the latter case it is rather by the difference of height, of elasticity, and by the peculiar configuration of the supposed tumour, that it is recognized as independent of the uterus.

"Limited to a greater or less extent of the circumference of the uterus, it leaves free one or more, or at least one part of the vaginal cul-de-sacs, all of which it is necessary carefully to explore, not only by the touch, but also conjoined with it abdominal palpation. By this comparative examination there can be ascertained not only the existence of the tumour and its extent, but also the extent of the uterine circumference not involved, and to appreciate the different displacements, versions, flexions, or rotations on its axis, which the uterus has undergone. The depression with the finger of the free part of the cul-de-sacs enables us to ascertain—and still more certainly by comparative measuring—the fulness of the parts affected, then the varying resistance of different parts of the circumference of the uterine neck, from which, as a centre, all our investigations should proceed.

"Subsequently we can explore one face or one border of the uterus, which is much more useful in the recognition of any flexion of this organ. This is a very important point, since a flexion may be so easily taken for a peri-uterine tumour that too much attention cannot be given to this part of the exploration. Examination of the free cul-de-sac informs us whether it is increased or diminished in size; increase and diminution, which are determined by the displacements the tumour has impressed on the uterus. These displacements may be various, not only according to the different cul-de-sacs invaded by the tumours, but also according to the point, more or less elevated, that this tumour occupies in the same cul-de-sac, and also according to its thickness."

M. Bernutz next proceeds to speak of the various uterine displacements resulting from pelvi-peritonitis, giving drawings illustrating these, and stating that displacement *en masse* is the rarest, and *latero-version* the most frequent.

"It is to be borne in mind that these tumours at their debut are not large, and are only accessible to vaginal touch, the iliac fossa presenting but a vague sense of fulness. Later, as a consequence of continued or of renewed inflammation, the latter generally, and resulting from menstrual congestion without discharge, or from bodily fatigue, these tumours present at their vaginal surface more or less distinct, hard prominences, and can also be detected by abdominal exploration; very rarely do they pass the superior limit of the pelvic excavation, and when they do, only one or two fingers' breadth.

"Sometimes pelvi-peritonitis terminates in resolution in three or four weeks, more especially where it has been of small extent, and consequent upon accidental menstrual suppression. Oftener it assumes the chronic form to the great despair of patient and physician; there are frequent renewals of inflammation especially in the puerperal form of the disease, or in those varieties which have for their cause chronic catarrhal metritis, either blennorrhagic or scrofulous. But space is wanting to describe all this, as well as the cachectic condition of the patients from the anæmia which is itself a cause of renewals of the disease, the hysteralgia, which is not to be confounded with irritable uterus, the metrorrhagia,[1] which is so frequent an occurrence in the course of pelvi-peritonitis, for which often the best hæmostatic is a large blister or leeches to the painful iliac fossæ."

The author's observations in reference to the nervous state of these patients, are of such value that we cannot forego presenting the following extract:—

"This is sometimes to be attributed to the cachectic condition induced by the long continuance of the disease, and sometimes to the development of hysteria, or of hypochondriasis which the orchitis has excited, not directly, but by the depressing mental anxieties which are almost always the sad companions of affections of the genital organs. We insist upon this, that the diseases of the genital, more than those of any other organs, have the unhappy privilege of making men and women hypochondriac—women still more than men, who regard themselves as smitten with a sort of physical disability—because we do not think these mental sufferings have been sufficiently regarded in female pathology. We wish particularly to indicate in the development of the nervous accidents of the final periods, the influence of the cruel and numerous griefs and the anxious fears as to the future, which the affectionate woman experiences from the long duration of a pelvi-peritonitis. We are fully convinced that these sufferings, the fear of losing the affections upon which her happiness depends, the fears as to the future which unhappily are not always ill founded, better explain the genesis of hysteria in these circumstances, than all the ridiculous nonsense about the sympathies of the uterus which only mystifies the matter."

---

[1] M. Bernutz suggests that the frequency with which metrorrhagia is observed in the patients at Lourcine is to be attributed to the mercurial treatment to which they were subjected for syphilitic affection which they had in addition to pelviperitonitis. And here, probably, most would coincide. But how reconcile it with the statement of Guerin (op. cit.) where, after speaking of the notable diminution of the blood-globules of the syphilitic, he observes:—

"C'est lá une indication incontestable de l'utilité des médicaments toniques, tels que le fer et le quinquina. Mais chose merveillense! le mercure, que par son action sur un homme sain, produria infailliblement un appauvrissement du sang, est l'agent le plus propre à reconstituer les globules chez un sujet syphilitique."

We must omit, for want of space, all reference to the special descriptions of purulent and of chronic pelvi-peritonitis, and pass directly to the

Diagnosis.—This varies in the acute and chronic forms of the disease, and also in the different stages of the first. In the acute form we may confound pelvi-peritonitis with hæmatocele, inflammation of an ovarian cyst, or phlegmon of the iliac fossa; the tumours of pelvi-peritonitis may be distinguished from inflammation of the broad ligaments, by their position, their physical characters, and by the uterine displacements they cause. The chronic form may be confounded with uterine engorgements, uterine displacements, and fibroids and hysteralgia. As to the first of these diseases, "unfortunately it may be said that we know but little in comparison with that which we do not know; the diagnosis is not difficult in those cases where the uterus is uniformly increased." "The diagnosis is not very difficult even where the general uterine engorgement is connected with a tubo-ovarian varicocele which, at the menstrual period and during the active stage of the losses symptomatic of this hemorrhoidal condition of the genital organs, causes tumours, semifluctuating and lateral to the uterus, but which have this peculiarity that they disappear as the discharge ceases." The author, in illustration of this point, then refers to the case of a lady from Kentucky, in which one of his colleagues had diagnosed a peri-uterine phlegmon; but which he, himself, ascertained to be varicoceles, as they were only manifest during menstruation. The whole subject of diagnosis occupies between 70 and 80 pages; but with this glance we must pass on to the

Treatment.—From the numerous varieties of the disease it is impossible to formulate treatment applicable to all cases. The therapeutic indications are different in the acute and chronic forms; different too, in sero-adhesive and in purulent inflammation, and especially as to the malady of which this disease is the consequence and as to the constitutional state of the patient. In the acute form leeches should be applied to the iliac regions twenty-five or thirty, followed by wet compresses, or warm poultices, if they can be borne; repeat the leeches, if the disease is not checked and the strength of the patient will permit, in eight or ten hours.

Very rarely will it be advisable to resort to leeching the next day; but then if a satisfactory amendment has not been attained, cover the entire abdomen with a camphorated blister. Internally give every hour one-fifth of a grain of extract of opium until narcotism is induced; then lengthen the intervals so that only slight somnolence may be maintained. In this initial period, all purgatives should be avoided, calomel as much as any other. Where constipation subsequently demands interference, lavements of warm water thrown through an œsophagus tube introduced as high up as possible so that the injection may pass into that part of the intestine that does not descend into the pelvic cavity.

When suppuration has occurred, and symptoms of hectic are manifested, then an artificial opening may be made, preferably in the vagina; but the purulent cyst should not be injected, even with warm water, as advised by Recamier, for a fatal result has followed this simple and apparently safe operation, still less with solutions of iodine, as proposed by Demarquay. After the puncture, absolute repose should be continued, cataplasms and emollient enemeta made use of, and such therapeutical means as the condition of the patient may require.

In the sero-adhesive inflammations of the pelvic peritoneum, the symptoms are rarely so grave as in the first form, and therefore do not ordinarily demand such vigorous antiphlogistic treatment. Still, at first the leeches may be applied to the abdomen when the speculum cannot be introduced without causing pain; but when it can, then leeches to the neck of the womb will be much more efficient and safer too than scarification, which causes very slight loss of blood, and in a case reported by Aran, was followed by general peritonitis that rapidly proved fatal. The leeching of the neck may be repeated as occasion requires, and blisters to the iliac regions. In the second period of this variety, absolute repose, laudanumized cataplasms, a bath every three or four days, powdered seeds of conium internally, and especially a properly selected regimen, constitute the essentials of treatment. In order to prevent movements of the genital organs, caused by walking, &c., M. Bernutz advises that the patients, even some time after their recovery, should wear a hypogastric girdle, a sort of corset for the lower part of the abdomen; of this an excellent illustration and description are given. It is advised for similar reasons to those which make the surgeon recommend in man a suspensory bandage in case of orchitis. By immobilizing the organs, we contribute to the comfort of the patient, and often prevent the continuance of the disease in a chronic form.

> "In the *treatment of the chronic form*, bleedings pompously styled 'derivatives and revulsives,' and low diet, should not be resorted to. Sometimes it may be necessary to apply leeches to the cervix-uteri; sometimes to use blisters, dressing the vesicated surface with muriate of morphia when the pains seem at all neuralgic; when menorrhagia occurs, repose on the bed, which constitutes the most essential part of the treatment of pelvi-peritonitis whether acute or chronic, should be enjoined, and anti-hemorrhagics may be administered internally, and sometimes leeches or a blister to one or the other of the iliac regions may be advisable. In cases where nervous symptoms predominate recourse should be had to *hydro-therapia;* let the patient be wrapped each morning in a wet sheet, and over this a blanket so as to produce free perspiration. On the other hand, where digestion is difficult, alkaline baths, and at each meal[1] Vichy water; sulphur baths and sulphur waters internally for those who have at any time had any scrofulous manifestations; finally arsenical baths for those having rheumatic pains, and especially to those who under the influence of either arthritis or scrofula are subject to cutaneous diseases, and then in addition in some of these cases Fowler's solution may be given internally:" such is the treatment advised.

The author dwells here, as well as elsewhere throughout the volumes, when discussing treatment, especially upon the importance of appreciating the diathesis of the patient in order to direct the medication.

---

[1] Vichy waters are simply a pleasant form of solution of bicarbonate of soda; upon this salt all their medical activity depends.

"I have never seen," he remarks, "I can truthfully say, in patients who take suitable care of their health, their disease persist during consecutive years, at least when they were not the victims of a diathetic malady which perpetuated their sufferings."

Uterine Deviations, which constitutes the final memoir of these valuable volumes, is the work of Goupil; we cannot now enter upon its presentation, and we the more cheerfully postpone this duty as we desire to discuss at some length the views therein presented in comparison with the teachings of other authors, both American and foreign, and therefore it seems proper that this work should be made the subject of a separate review.

M. Bernutz, in his preface, frankly states, that notwithstanding the trouble taken in the preparation of this work, he does not claim for it freedom from deficiencies and imperfections, and that he even thought it probably but a transitory production, serving as a starting point for future works.

We believe the profession will accord it higher praise, and its merits will secure for it more than a transitory existence.

The last edition of Dr. Tilt's *Uterine and Ovarian Inflammation*, London, 1862, contains four admirable lithographs of pseudo-membranous ulcerations of the neck of the womb, for which the author states his indebtedness to Bernutz and Goupil, and "which are destined to adorn the third volume of their work on Diseases of Women." We cannot tell what changes the lamented death of Goupil may have made; but the issuing of a third volume will not occur at any rate until after the edition of the first and second is exhausted. And yet we are sure physicians would hail with delight a work from Bernutz in which, among other subjects, that of catarrhal metritis should be fully discussed; we are sure such a work would meet a need that those who have much to do in the treatment of diseases of females often and urgently experience.

One word as to the Sydenham Society's Translation. This is an abridgment; a comparison of the number of pages of the original and that of the translation, will show how much the former has been shortened. And this abbreviation has been obtained at the expense of many of the cases—many thrown out altogether—of the reflections connected therewith, as well as of some of the authors' text, &c.; elimination and condensation have been most freely resorted to. We do not wonder that M. Bernutz thinks the English translator and editor has committed an error in sacrificing so much of the original.

And he must be a sanguine man indeed who, in reference to the first volume in which 590 pages were condensed into 276, could write, "It is hoped that this has been done without any material loss to the usefulness of the work." (*Extract from Report presented to the Eighth Annual Meeting of the New Sydenham Society.*)

Might not translators, who may be under the necessity of abridging, confer a greater benefit upon their readers, if, instead of subtracting this, and condensing here, and eliminating there, they would simply cut off one end of the work—in a word, follow the example of Procrustes, the famous robber of Attica? T. P.

ART. XVIII.—*The Indigestions: or Diseases of the Digestive Organs Functionally Treated.* By THOMAS KING CHAMBERS, Honorary Physician to H. R. H. the Prince of Wales, etc. etc. 8vo. pp. 287. Philadelphia: Henry C. Lea, 1867.

THE precursor of this work, entitled "Digestion and its Derangements," and the work entitled the "Renewal of Life," have made Dr. Chambers well known to medical readers of this country. As an author, he is original, independent, out-spoken, and practical. The works just named are rich in facts, and abound in views of pathology and practice, which, if not always sound, are striking and suggestive, leading, in general, in the direction of restorative or conservative medicine. These characters belong also to the work which we now purpose to notice.

The plural number—indigestions—is significant, denoting the important fact that there are various forms of disorder of the digestive system. The term dyspepsia, used in its usual comprehensive sense, embraces numerous functional affections concerning which the progress made in physiological knowledge of late years has shed much light. It is not, as heretofore, the name of a particular affection of the stomach, but it comprehends varied derangements, intestinal as well as gastric. Moreover, attention to the digestive functions enters more or less into the consideration and treatment of almost all diseases, as the author remarks—

> "It is almost impossible to exaggerate the importance of the digestive viscera to the cure of disease. In every acute case, surgical or medical, the modification of the result produced by our efforts depends almost entirely on how far, how wisely, or how foolishly these organs are watched over; whether they are well or ill treated, either by the scientific guidance of the skilled physiologist, or by the empirical rules of the routine practitioner, or according to the tradition of the nurse or the instinct of the patient." Again: "Whatever value we may attach to the evidence of the dependence of disease on the digestive organs, it is very clear that we look to them for relief from disease. Out of the six or seven hundred forms of medicines in habitual use, very few indeed are not occasionally offered to the stomach for acceptance, and an overwhelming majority of them are adapted for use only in this way. If we are still to employ this time-honoured agency in our attempts to cure bodily ailments (and I see no threatening of a change at present), it is surely a matter of great interest to secure the active working condition of what our forefathers in anatomy picturesquely called the *portal*."

The indigestions are varied in respect of different kinds of food. Dr. Chambers considers separately, 1st, indigestion of starch and sugar, or vegetable food; 2d, indigestion of albumen and fibrin; 3d, indigestion of fat; and, 4th, indigestion of water. Chapter second of the work is devoted to these different indigestions. The plan which the author pursues is to illustrate different practical points relating to causation, symptoms, etc., by brief abstracts of cases selected from hospital records or notes of private practice. Two hundred and twenty-seven illustrative cases are introduced in the volume. With respect to the indigestion of starch and sugar, cases are given to show its dependence on a lack of albuminous food and pleasurable emotion, on voluntary abstinence, loss of appetite, Bright's disease, muscular exhaustion, a sudden mental shock and wearing mental distress. Of the agency of the mind in inducing indigestion the author states, and as we believe correctly, that "perhaps to that more than to any other cause the history of it may be traced in the classes of society placed above the chance of physical want." He supposes that chronic catarrh of the stomach induces dyspepsia "by enveloping the food and impeding the gastric juice from freely mixing with it." Chronic catarrh of the stomach, however (if it be insisted upon that this superfluous word catarrh be used) is not a functional affection, but neither more nor less than subacute or chronic gastritis.

The illustrations of indigestion of albumen and fibrin are few. The author states that—

> "The digestion of animal food is less interfered with by external circumstances, and therefore less frequently interfered with than that of vegetable. Some considerable debilitating action on the nervous system is required to produce even an acute temporary dyspepsia of meat. And I may observe that it is through the nervous system in almost all instances that proteinous indigestion arises."

Indigestion of fat is independent of the salivary and gastric fluids, the digestive changes in this alimentary principle taking place in the small intestine, and effected chiefly by the agency of the pancreatic secretion and the bile. Hence, fat may be fully digested notwithstanding the indigestion of starch, sugar, and albuminoids; and, *per contra*, indigestion may relate exclusively to fatty articles of food. The indigestion of fat is a notable feature of most cases of pulmonary tuberculosis, and is implied in the name phthisis. Cases are introduced to illustrate the ability of the system to tolerate tuberculous disease provided fat be digested in abundance, and, on the other hand, the inability to arrest that disease if the power of assimilating fat be much impaired. Clinical observation will, we believe, sustain the correctness of the point just stated. With regard to the management of tuberculous disease the author justly remarks: "It is truly by aid of the digestive viscera alone that consumption can be curable. Medicines addressed to other parts may be indirectly useful sometimes, but they more commonly impede the recovery; whereas aid judiciously given in this quarter is always beneficial and often successful." He adds: "The effects of cod-liver oil become less and less a marvel the more we know of physiology." * * * * "To find the easiest assimilated oil, and to prepare the digestion for the absorption of oil, are the main problems in the cure of consumption." Fat is sometimes eaten with relish although not digested, but there is sometimes an invincible repugnance to fat. Dr. Chambers attributes in some cases the repugnance to meat to the disgust for fat, inasmuch as "all flesh is scented by its own peculiar adipose tissue." It is an interesting fact that the desire for fat is generally developed at puberty. In some persons the repugnance to fat existing before, continues after, puberty. This is apt to be the case in girls, and perhaps proceeds, in some instances, from the idea sometimes inculcated on the youthful mind that eating of fat denotes grossness of appetite. Here is an example, among many others, of an antagonism between popular notions and physiology. Dr. Chambers is disposed to think well of the artificial emulsions of fat with pancreatic juice, as an easily assimilated oleaginous article of food. Such a preparation has been introduced by Dr. Dobell, of London, under the name pancreatic emulsion. The apprehension of trichina, which Dr. Chambers suggests, is certainly without foundation if only fat and pancreatic juice be employed in its preparation.

The correctness of the phrase indigestion of water admits of question, inasmuch as water undergoes no change in the alimentary canal. The facts, however, pointed out under this head are of interest. The density of the blood, its motion and its alkalinity, are considered as the circumstances favouring osmosis into the bloodvessels. Cases are given showing defective osmosis in this direction from diminished density of the blood in anaemia, from retardation of the circulation by valvular disease of the heart, and from a deficiency of acid in the stomach.

Under the head of "Treatment of Indigestion based on the Article of Food not digested," are many excellent practical suggestions. We quote the following:—

> "Patients and doctors both make a great mistake in shunning absolutely all that causes pain or inconvenience. They ought to consider whether the thing shunned is or is not an essential to high health: if it be so, every effort should first be used to get it borne without pain; where that goal cannot be reached, wisdom and duty will often guide us to submit to the pain for the sake of the accompanying advantage." Again: "I do not think that we profit much from those offhand advisers who suppose they accomplish everything by forbidding the use of the sort of food which produces the symptoms. Neither in the indigestion of vegetable, animal, oleaginous, or watery articles of diet does this restore health. On the contrary, as I have shown by examples which every one may cap out of his own patients, if he will but turn them over in his mind, an actual state of disease may arise from persistence in the remedy. A short repose for a time, and abstinence from an unnecessary excess in the undigested dishes, is doubtless wise. But that abstinence must not be complete or final. What the patient wants, when he complains he cannot eat so-and-so, is not to have 'don't' said to him—his stomach has said so already—but to be enabled to eat it like other people."

The treatment based on pathological condition consists of the use of tonics. The author's favourite tonic is quinia in two-grain doses, dissolved in lemon juice and sufficiently diluted, with the addition of from one-twenty-fourth to one-twentieth of hydrochlorate of strychnia.

In chapter third are considered the habits of social life leading to indigestion. Under this head are embraced eating too little, eating too much, sedentary habits, tight lacing, sexual excesses, compression of epigastrium by shoemakers, solitude, intellectual exertion, want of employment, abuse of purgatives, abuse of alcohol, tobacco, tea and opium. The illustrative cases and practical suggestions introduced in connection with these subdivisions of the subject of this chapter will well repay a careful perusal.

The remaining six chapters of the work relate to the following subjects: Abdominal pains, vomiting, flatulence, diarrhœa, constipation and costiveness, and nervous diseases connected with indigestion. Of the manner in which these subjects are treated, the reader may form an idea from the cursory analysis which we have given of the chapter treating of the different indigestions. In the six chapters, with an enumeration of the subjects of which we must here content ourselves, will be found much useful information, many instructive cases, and sound therapeutical counsel. Appended to the work is an analysis giving a list of the two hundred and twenty seven cases arranged with reference to the points which they serve to illustrate.

After what we have already written it is needless to say that we think highly of Dr. Chambers' work. We consider it a work which will do much good in the way of correcting important errors concerning indigestion, dietetics, and the use of medicines—errors still too prevalent among physicians, and which are deeply rooted in the minds of the people. Popular errors relating to health and disease originate in medical doctrines, but while the latter change with the progress of medicine, the former remain so fixed that physicians have to contend against them long before they are removed. To say, however, that Dr. Chambers' book will be useful in the way of correcting professional and, thereby in time, popular errors, is not to express the sum total of its merit. The author has studied disorders of the digestive system clinically, and as viewed in the light derived from recent developments in physiology and pathology; and his writings show a mental quality not always manifested in connection with talent and learning, viz., good sense. A. F.

ART. XIX.—*St. George's Hospital Reports.* Edited by JOHN W. OGLE, M. D., F. R. C. P., and TIMOTHY HOLMES, F. R. C. S. Vol. I. 1866. 8vo. pp. 444. London: John Churchill & Sons.

IN imitation of the example long since set by the staff of Guy's Hospital, and more recently followed by the medical attendants of the London and St. Bartholomew's respectively, the physicians and surgeons of St. George's Hospital have offered the volume before us as the first of a series to be issued annually under the supervision of the gentlemen whose names appear on the title-page of the work as editors. The first fruits of this laudable undertaking are presented to the profession as a goodly volume of over four hundred pages, containing twenty-four distinct papers, and illustrated with a handsome coloured lithograph and numerous well-executed woodcuts. On these several papers it is our intention to offer a few comments, more or less in detail, as each may seem to require, that those of our readers who may not have access to the volume itself may nevertheless be enabled to form some idea of the richness and variety of its contents.

The first paper is an interesting historical sketch by W. E. PAGE, M. D., senior physician to the hospital, from which we learn that St. George's (originally an offshoot from the Westminster Infirmary, which was the first hospital for the sick supported by voluntary contributions) was opened for the reception of patients January 1, 1733–4, at first being furnished with only thirty beds. This limited accommodation was gradually increased by the purchase of adjacent buildings, till in 1825 the number of beds, though now amounting to two hundred, was found quite inadequate for the requirements of the public, and the rebuilding of the hospital was at once undertaken. The new structure was opened in 1833, and the hospital now contains three hundred and fifty beds, with separate wards for convalescents, and ample room for the convenience of administration and the important adjuncts of lecture-halls, pathological museum, etc. This interesting paper concludes with lists of the physicians and surgeons who have been connected with the hospital since its foundation (the second list especially containing many of the brightest names of British medical science, from Cheselden and Hunter to the illustrious and lamented Brodie), and is adorned with views of the hospital as it was in 1746 and as it is at the present day, the latter constituting an appropriate frontispiece to the volume.

The first of the practical papers offered by St. George's Staff is No. 1 of a series of contributions to the Surgery of the Head, by Mr. PRESCOTT G. HEWETT, favourably known to the profession in this country from his excellent monograph on injuries of the head, contained in Holmes's *System of Surgery.* The present paper is on the "Deviations of the Base of the Skull in Chronic Hydrocephalus," and is founded upon the careful examination of numerous specimens, and the published descriptions and illustrations of several important cases principally taken from German writers. The most valuable practical point brought forward by the author is the information to be derived from the appearance of the eyes in a hydrocephalic patient as indicating the nature of the intra-cranial dropsy, whether ventricular or merely arachnoidean. Ventricular hydrocephalus, if of early occurrence, will necessarily affect the orbital plates of the frontal bone, diminishing or destroying the orbital arch, and sometimes even largely invading the orbit, by the abnormal convexity produced by the pressure from behind. This condition may be recognized during life by the eyes being more or less driven from their sockets and directed downwards, so that the pupil may be almost concealed by the lower lid, while the white of the eye is more than usually uncovered. Arachnoidean dropsy is uniformly limited to the upper and lateral parts of the brain surface by the existence of a more or less perfect cyst, and is consequently unattended by the peculiarities about the orbit just described. Ventricular hydrocephalus, however, may come on at a comparatively late period, when the orbital plates are not so susceptible of distortion from pressure, without producing appearances recognizable during life. Thus while the presence of the orbital peculiarities referred to is diagnostic of the existence of ventricular effusion, their absence does not certainly show that the arachnoid is alone involved. Mr. Hewett's paper is accompanied with two wood-cuts.

We next have a very well-written paper by Mr. HOLMES on the "Treatment of Meningocele by the Injection of Iodine." One case is reported in full and two more referred to, one of which was likewise treated by injection by the author, and the other treated in a similar manner by Mr. Paget at St. Bartholomew's Hospital, and known by a short notice in the *Transactions of the Pathological Society of London*, vol. xvi. Both of Mr. Holmes's cases proved fatal, though from causes apparently unconnected with the operation, while in the child operated on by Mr. Paget the disease was supposed to have been checked in its course, though nearly three years afterwards a cure had not been obtained. The author terminates his paper by investigating the question whether, in case iodine injection should fail to effect a cure, excision of the entire tumour would or would not be advisable. His conclusion is that the advantages to be derived from the latter operation would be at least questionable; a conclusion to which, we think, our readers will readily accede.

Two papers on "Typhus Fever" come next in order, both of considerable interest, and well repaying a careful perusal. The former is by Dr. R. E. THOMPSON, the medical registrar of the hospital, and gives an account of the epidemic of 1864–5, as observed in the wards. Careful observations were made as to the temperature of the disease, and a "thermograph" of a favourable case is given as an illustration.

> "The increase of superficial heat in typhus takes place very rapidly after the first symptoms of poisoning, and there is an exacerbation towards night, the temperature falling in the early morning; the scale of heat ascends higher and higher up to the fifth and sixth days, when the maximum height (in favourable cases) appears to be reached; a slight diminution then takes place, and the temperature remains pretty steady until the day of crisis, when a sudden and rapid fall is observed to take place, in the most favourable cases, to a little below the standard of health, where it remains with very slight variations for weeks. . . . Some sort of prognosis may be made from the observations of the fifth and sixth day of typhus: if the morning temperature be above 104, a

severe attack of fever may be expected; and if the temperature gradually increases during the second week, a fatal result must be anticipated; but this increase must not be a transient aggravation from some special cause, but one continued for a sequence of days, and then the thermometer may be trusted to, anticipating the pulse-evidence by hours and even days. 105° Fahr. is a dangerous temperature for the second week; the highest I have seen reached was 108.5°; this was observed three-quarters of an hour before the patient died."

The author has observed a diminished temperature to follow coldness of the external atmosphere, as well as the coming on of the menstrual flow, a sudden diarrhœa, or the emptying of a distended bladder. In his own case—for he was attacked by the fever—he found that his temperature for some months after recovery was lower than normal.

The second paper on typhus is by Mr. ALLBUTT, of Leeds, and is founded on the observation of more than six hundred cases treated in the Fever Hospital of that town. This paper is eminently practical, and his conclusions, which we copy in full, are entitled to great weight, from his large experience and the careful way in which he has made use of it. The following are the measures he recommends to be adopted:—

"1. An unusual supply of fresh air night and day throughout the hospital, all fear of draughts being disregarded.

"2. Regular nursing and feeding, and the use, when necessary, of the best Cognac brandy in addition.

"3. Prevention by morphia, if possible, of a second sleepless night, at whatever stage of the fever it may be threatened.

"4. The use of a combination of camphor and morphia in low delirium.

"5. The use of a combination of tartar emetic and morphia in wild delirium."

The author states his "conviction that if we received all our cases at the beginning, the proper mortality of typhus at the usual average of ages would be shown to be not more than 7 per cent."

The next paper is one of the longest and most valuable in the entire volume. It has for its subject, "The Diagnosis, Pathology, and Treatment of Progressive Locomotor Ataxy," and the name of its author, Mr. J. LOCKHART CLARKE, is a sufficient warrant for the importance of the statements it contains. Eleven cases are narrated in detail, each of much intrinsic interest, the perusal of which will well repay any one interested in the study of nervous affections. From the author's remarks on the diagnosis of this disease, we glean the following:—

"Strabismus, amaurosis, anæsthesia, and the so-called 'rheumatic' pains which frequently precede, for a great length of time, the unsteadiness of voluntary movement, are experienced in other disorders which differ essentially from locomotor ataxy. But nevertheless whenever any one of these affections supervenes, it should always suggest the possibility of it being a precursor of ataxy. . . . . In a large proportion of instances the strabismus is accompanied by amblyopia; and when it is single the amblyopia is on the corresponding side. . . . . The amaurosis of ataxy as regards its ophthalmoscopical appearance is unlike the amaurosis from disease of parts within the head. In amaurosis from intercranial disease the optic disk always shows evidences of recent or past neuritis, which is not the case in ataxy."—[Dr. Hughlings, *Lancet*, June 10, 1865.]

The author has found the test proposed by Trousseau not altogether satisfactory, and narrates a case (Case VIII., p. 92) to illustrate his objection. With regard to the etiology of locomotor ataxy, the author states that almost anything that depresses the nervous power may prove an exciting cause in those predisposed to the affection, but that of all such causes "a prolonged exposure to the combined operation of cold and damp is by far the most common, as it is probably the most certain in its effects." In respect of treatment the author recommends that the whole of the body should be enveloped in flannel, with a lining of silk to the back of the flannel shirt. The diet should be wholesome and generous, with a moderate allowance of wine or beer. Should the appetite fail and strength and health be invaded, bark and iron, strychnia and cod-liver oil may be advantageously administered. Nitro-muriatic acid has been sometimes given with decided benefit. Silver in the form of the nitrate or the oxide, alone, or combined with opium, belladonna or cannabis indica, has been found of considerable service. Purgatives and dry cupping to the spine are frequently useful by relieving congestion. We regret that the author has disfigured this portion of his paper by writing (p. 103) "iodide of potash" instead of "iodide of potassium," or, if preferred, "hydriodate of potassa." Either of these would have been correct, but the expression in the text represents a chemical impossibility.

The author concludes this valuable paper with an account of the pathological anatomy of the disease in question, which we transcribe in full for the benefit of our readers.

> "In the true locomotor ataxy the spinal cord is invariably altered in structure. Its membranes, however, are sometimes apparently unaffected, or are affected only in a slight degree; but generally they are much congested, and I have seen them thickened posteriorly by exudations, and adherent not only to each other, but to the posterior surface of the cord. Now, the posterior columns, including the posterior nerve-roots, are the parts of the cord that are chiefly altered in structure. This alteration is peculiar, and consists of atrophy and disintegration of the nerve-fibres to a greater or less extent, with hypertrophy of the connective tissue, which gives to the columns a grayish and more transparent aspect, and in this tissue are imbedded a multitude of corpora amylacea. Many of the bloodvessels that traverse the columns are loaded or surrounded, to a variable depth, by oil-globules of different sizes. For the production of ataxy it seems to be necessary that the changes extend along a certain length—from one to two inches—of the cord. The posterior nerve-roots, both within and without the cord, are frequently affected by the same kind of degeneration, which sometimes extends to the surface of even the lateral columns, and occasionally along the edges of the anterior. Not unfrequently the extremities of the posterior cornua, and even deeper parts of the gray substance are more or less damaged by areas of disintegration. The morbid process appears to travel from the centre to the periphery—that is, from the spinal cord to the posterior roots. In the cerebral nerves, on the contrary, the morbid change seems to travel in the opposite direction—that is, from the periphery towards the centres. From the optic nerves it has been found to extend as far as the corpora quadrigemina. With the exception of the fifth, seventh, and eighth pair, all the cerebral nerves have occasionally been found more or less altered in structure."

The next paper in the volume is on "Rheumatic Iritis," by Mr. JAMES ROUSE. The author proposes the name "Cylicotomy" for the operation heretofore known as Hancock's, and which Mr. Rouse classes with corneal paracentesis as useful in slight cases of intra-ocular tension, but not suitable to replace iridectomy in cases of recurring and chronic iritis. The author has found that the statement of German writers, that in syphilitic iritis the pupil is always displaced upwards and inwards, is incorrect. Mr. Rouse makes no mention of that peculiarly troublesome form of rheumatic iritis which seems to bear the same relation to the ordinary form that *gonorrhœal rheumatism* does to the idiopathic variety of that disease.

We have next a short paper, by the lamented TOYNBEE, upon "Cerebral Symptoms occurring in certain Affections of the Ear." Any force exerted upon the malleolus and the outer surface of the membrana tympani passes inwards to the base of the stapes and to the contents of the vestibule; hence pressure upon the outer surface of the membrana tympani is tantamount to pressure upon the contents of the vestibule. The symptoms produced by such pressure are a sense of giddiness, an inability to walk straight, loss of distinctness of vision, and sometimes a feeling of numbness in the affected side of the head. To these may be added depression of spirits, independent of the mental discomfort produced by the accompanying deafness. The pressure requisite to produce these symptoms may be owing to the presence of cerumen or epidermis on the outer surface of the drum, the presence of a foreign body (cotton wool or an artificial drum for instance), a polypus on the outer surface of the same organ, or the forcible drawing inwards of the drum in cases of obstruction of the Eustachian tube. Giddiness and partial insensibility may likewise be produced by pressure on the inner surface of the membrana tympani, or by the application of too cold or too hot water to its outer surface. Several cases are given in illustration of these various conditions. The paper is a practical one, and contains hints that may profitably be borne in mind. As a case in point, we may instance one that occurred to ourselves in our last term of hospital service. A seaman was admitted to our wards with a severe scalp wound, laying bare but apparently not implicating the bone. The wound healed slowly, and about a fortnight after his admission he began to complain of dizziness, a dull pain in his head, and ringing in his ears. At the same time he became slightly jaundiced. These symptoms, with the previous history, looked serious, but the house-surgeon discovering a large accumulation of wax in either ear, a profuse syringing with warm water soon brought about a cure.

The ninth paper in our volume is by Mr. J. WARRINGTON HAWARD, "On some Points connected with the Treatment of Hernia." From Mr. Haward's essay we learn that 181 cases of strangulated hernia have been subjected to operation at St. George's Hospital within ten years. The importance of avoiding delay in these cases may be seen from the fact that of all these, those which recovered had had the bowel strangulated for an average time of thirty-nine hours, while in those that died the average time of strangulation had been seventy-five hours. The mortality after the operation was about 30.5 per cent. The author's remarks upon taxis and its adjuvants, especially the use of anæsthetics and ice, are practical and judicious. Nearly one-fourth of the entire number of deaths from strangulated hernia in St. George's Hospital have been distinctly referable to the forcible taxis used before their admission. In the operation, the surgeons of "St. George's" almost uniformly open the sac; in fact, the external operation known as "Petit's," has been practised but six times in 181 cases. The author argues well in favour of the operation by opening the sac; and if the surgeon were confined to but one mode of procedure in every case indiscriminately, Petit's operation should undoubtedly be rejected. But in fact no rule in this matter is universally applicable, and in a case where strangulation had existed but a short time, if the surgeon on reaching the sac should find that the bowel could by slight pressure be emptied and rendered perfectly flaccid, we can see no objection to the sac being returned unopened. In any case of doubt, however, the other plan would undoubtedly be the safer.

The author recommends in the after-treatment that the bowels should be kept at rest by means of opium for seven or eight days. We have found it a good plan to give a full dose of morphia by hypodermic injection, before the patient has recovered from the anæsthesia induced for the operation.

With regard to the mooted question of the radical cure of hernia, the author considers the only operations worthy of any attention to be those of Prof. Wützer and Mr. Wood. Mr. Syme's operation, which the author does not even mention, has certainly the merit of greater simplicity than any other, and (though it has failed in our own hands), judging from published reports, has met with at least as much success. Dr. D. Hayes Agnew, of the Pennsylvania Hospital in this city, has devised an operation for the radical cure of hernia, which he has practised successfully in several cases, and which seems to us more philosophical than any other; we understand that it is his intention shortly to publish its details, with a full account of the cases in which it has been employed.

An interesting paper by Mr. HOLMES follows, upon "Hip-joint Amputations." The author narrates four cases in which this operation has been practised, one in a case of recurrent fibro-plastic tumour, and three in various conditions of hip-joint disease. In one of the latter, the operation was completely successful, and in the two others, as well as in the case of recurrent tumour, the amputation was undoubtedly the means of prolonging life. Mr. Holmes refers to the unsatisfactory nature of the statistics of this operation as hitherto collected, and states his conclusions in the following words, to which we most cordially agree: "Meanwhile, we must be content with the obvious fact that all amputations are dangerous injuries; and the amputation at the hip-joint so very much so that *it ought never to be resorted to unless there is no other chance of life.*" [The *italics* are ours.] The author believes hemorrhage at the time of the operation to be its principal danger, and points out the fact that, though the use of the abdominal tourniquet in a great measure obviates this difficulty, yet its employment is not unattended with disadvantages in the interference with the descent of the diaphragm, and the unavoidable pressure upon the important contents of the abdominal cavity. The second part of this paper, that upon amputation in morbus coxarius is, to our mind, the most valuable, as opening up the question of the propriety of this operation in cases to which it has been generally considered inapplicable.

The author's arguments are sound and well put, and his conclusion is, we think, unavoidable, that the operation is legitimate and desirable as a last resort either primarily, where the disease is too extensive to admit of excision, or secondarily, where excision has been practised and failed.

In a paper where there is so much to commend, it may seem invidious to find fault; but this is the special duty of the reviewer. The excellences of the paper are obvious to all, and we think it but right to call attention to two points, both of which may, however, be classed as omissions rather than as absolute errors. On page 154, Mr. Holmes says: "I am not able to refer to any case exactly analogous to the first of these three. I mean one where morbus coxarius has been treated by amputation as a primary measure, etc." Now, it so happens that the first amputation at the hip-joint ever done in Philadelphia was in a case of precisely this nature; we refer to Dr. Duffee's operation in 1840, the patient being a coloured girl, six years old, who, seventeen years later, was an inmate of the obstetric wards of the Philadelphia Hospital, her delivery being successfully effected, and the stump being then healthy and presenting a good cicatrix. This case has been pubished twice within ten years [Packard, *Am. Journ. Med. Sci.*, July, 1857, and Morton, *Ibid.*, July, 1866]; and if English surgeons were as familiar with our literature as we are expected to be with theirs, this omission could not have occurred. The other point to which we have alluded is the author's remark upon his second case (p. 155), which proved fatal from abscesses in the brain. He says: "What the cause of the abscesses of the brain was I cannot form any opinion." We believe that cerebral abscess is a not very unfrequent termination in fatal cases of strumous suppuration whether connected with the joints or elsewhere. A remarkable case of this kind, where there was absolutely no history of pyæmia, so called, was reported by ourselves to the Philadelphia Pathological Society, and may be found in their published proceedings (Vol. II. p. 157).

These are but slight blemishes in a most valuable contribution to surgery. We think Mr. Holmes has conferred a benefit both upon the profession and upon humanity at large by indicating a means, hitherto not generally recognized, of saving life in a most distressing class of cases. The paper is adorned with two wood-cuts and a handsome coloured lithograph.

The next paper is one of thirty-two pages, by Dr. JOHN W. OGLE, "On Disease of the Brain as a Result of Diabetes Mellitus." The author refers to the numerous cases and experiments in which glycosuria has been the result of affections of the nervous system, and attempts to prove that in some instances this order is reversed, the diabetes being the cause of the brain affection. A case is related at considerable length in which, after diabetes had existed for several years, paralysis came on, first of one side and afterwards of both, the patient dying, and the autopsy revealing fibrinous clots in both middle cerebral arteries, with corresponding regions of cerebral softening. The author believes that the diabetes caused the brain softening, and that this in time gave rise to the arterial obstruction. Unfortunately for the absolute perfection of his theory, however, he has mentioned in the clinical record of the case a very significant phenomenon which is left without any explanation in the account of the post-mortem appearances. We refer to the development of what are called "two peculiar and very painful lumps . . . in the tissues of the right leg, one being in the thigh and the other in the calf. They were of about the size of a walnut and exceedingly tender when pressed upon, and appeared as if situated in the muscular substance of the joint, and they produced great discomfort in walking."

Both of these mysterious "lumps" disappeared in a few months, one of them returning, however, about two weeks before the first paralytic seizure, and not being entirely absent during the remainder of life. Now we are left completely in the dark as to the nature of these "lumps," but it appears to us that there is here at least a *possible* history of strumous abscesses connected or not with the joints, thrombosis, embolism, and secondary softening of the brain, the whole sequence of events having no *necessary* connection with the diabetes from which the patient had been previously suffering. The cessation of the glycosuria coincident with the onset of the cerebral symptoms has, it seems to us, no *peculiar* significance, as this has been frequently observed (as stated by the author himself, pp. 166 and 186, n. 25) in connection with the supervention of acute disease in other parts of the body.

This paper, which, although we do not think it conclusive, is nevertheless interesting and ingenious, contains the *post-mortem* records of fourteen cases of diabetes which proved fatal at St. George's Hospital. A little more care in the proof reading of these records would have been desirable.

Thus, at the foot of page 176, one or two lines have dropped out bodily; while the first line of page 177 gives us the rather startling *post-mortem* note that "both *legs* (sic) contained much (so-called) scrofulous deposit and several vomicæ."

The next paper, by HENRY BENCE JONES, M. D., on "Jaundice and Biliousness," is quite short, but pregnant with careful observation and reasoning. The common idea, that jaundice is produced by defective action of the liver is entirely erroneous, for if the liver ceased to act, though serious blood poisoning would result, as no bile could be formed, neither jaundice nor "biliousness" (which is, as it were, a first stage of jaundice) could ensue. Jaundice is due to exosmose from a distended gall-bladder, just as uræmia, properly so called, finds its cause in a distended urinary bladder or retention of urine. For the more serious conditions produced by the *suppression* of bile or urine, Dr. Jones proposes the names of *cholegenous* and *urinogenous* poisoning respectively. This explanation being premised, we have four different kinds of jaundice and of biliousness, to wit: (1.) Mechanical jaundice, or jaundice from obstruction; (2.) Catarrhal jaundice, or jaundice from catarrh of the duodenum; (3.) Chemical jaundice, or jaundice from suboxidation; and (4.) Nervous jaundice, or jaundice from excessive production of bile. The paper concludes with a brief indication of the treatment to be adopted in each of these several varieties.

We have next a short practical paper upon Paralysis occurring in childbed. The author, Dr. E. F. FUSSELL, recognizes five probable causes for this curious affection; these are: (1) Undue pressure in the act of delivery; (2) Reflex paralysis from uterine irritation; (3) Central exhaustion of the cord (a term borrowed from Dr. Gull's papers in *Guy's Hospital Reports*); (4) Blood-poisoning, frequently attended with albuminuria; and (5) Embolism, whether from a heart clot formed during profuse hemorrhage, or from the detachment of a portion of the venous clot in cases of milk-leg.

In one of the cases narrated, there is a suspicion that the paralysis may have been diphtheritic, the patient having lost a child from diphtheria but two weeks before her confinement. The prognosis of puerperal paralysis is happily favourable. The patients generally recover entirely, though after a variable interval.

Following Dr. Fussell's paper is one in rather an excited tone by Mr. CHARLES HUNTER, upon the "Modus Operandi of Hypodermic Injections." The moving cause for this paper appears to be that Dr. La Ségue, in a critical review upon subcutaneous medication, published some months since in the *Archives Générales de Médecine*, doubted the correctness of Mr. Hunter's views as to the want of superiority of local injections over those performed at a distant point in cases of neuralgia. The author appears to us to have gone somewhat out of his way to throw discredit upon the observations of Messrs. Mitchell, Morehouse, and Keen, of this city, as published in the number of this Journal for July, 1865. We suppose that no one would be disposed to question the fact that hypodermic injections produce marked effects upon the general system, effects obviously induced by means of absorption; at the same time, we think it doubtful whether any one, who, by experiment, has honestly convinced himself of the superiority of localized injections in cases of neuralgia, will be induced to change his views from the fact that Mr. Hunter thinks differently.

This paper is succeeded by a very short one by Mr. BRODHURST, on "Congenital Dislocation of the Thigh Bone." In all the cases observed the displacement was upward and backward; and it is believed by the author that all these cases are produced by undue traction on the part of the accoucheur in breech presentations or by violent uterine contractions in the process of delivery. If seen during the first two years of life, reduction can generally be effected and maintained; but, after this age, the absorption of the lip of the acetabulum will have progressed so far that mechanical contrivances must be employed to retain the head of the bone in its proper place. Mr. Brodhurst recommends, in such cases, division of the trochanteric muscles (subcutaneously, of course) and the subsequent use of a straight splint, with extension. A case is given where this operation was practised with a completely successful result.

Dr. WILLIAM OGLE contributes a paper "On the Diurnal Variations in the Temperature of the Human Body in Health." This is an important subject, as it is evidently necessary to be acquainted with the changes of animal temperature occurring in a normal state in order properly to appreciate the modifications brought about by disease. Dr. Ogle's observations were made upon persons of either sex and continued during a considerable period, every precaution being apparently taken to eliminate sources of error. The general conclusions at which the author arrives are as follows:—

> "α. The temperature of the internal organs is at its minimum about 6 A. M. After this there is a rise, which, under such conditions of life as I have described, reaches its maximum late in the afternoon. Then a fall begins, which lasts to 6 A. M. again.
>
> "β. The range within which the ordinary diurnal fluctuations occur is not of greater extent than about 1½° Fahr.
>
> "γ. The greater part of the rise is due to the combined influence of exercise and food.
>
> "δ. Exercise causes a considerable rise, whenever taken.
>
> "ε. Food causes a rise, which is most marked after breakfast, less so after lunch, and which is reduced after dinner to a mere retardation of the fall which without it would occur.
>
> "ζ. Alcohol (or rather claret) causes an immediate rapid fall. But this effect is temporary, and a reaction ensues by which the temperature is carried to as high a point or even higher than it would have reached had no alcohol been taken. Tea, on the other hand, causes an elevation of temperature.
>
> "η. The internal temperature varies with that of the external medium; but the small variations which occur in the air in the course of twenty-four hours scarcely produce appreciable results on our internal warmth.
>
> "ϑ. There is a rise in the early morning while we are still asleep, and a fall in the evening while we are still awake, which cannot be explained by reference to any of the hitherto mentioned influences. They are not due to variations in light; they are probably produced by periodic variations in the activity of the organic functions.
>
> "ι. The organic functions like those of animal life, have their period of repose; but their repose is less perfect, and begins and ends earlier."

Next comes a paper "On Rupture of Arteries Dependent on External Injury," by Mr. POLLOCK. The diagnosis of arterial from venous rupture in cases where no external wound permits a close examination, may be made from the more diffused nature of the swelling in the former case and from the much greater tension and hardness of the integuments. In rupture of a large artery, such as the femoral, there would be also immediate constitutional disturbance from the profuse extravasation of blood—an actual hemorrhage though no blood should escape externally. After rupture of the femoral or popliteal artery gangrene invariably follows, and amputation, if it has not been performed primarily, will become necessary as a secondary operation. The author narrates two cases, and analyzes eight others reported by Mr. Poland (*Guy's Hospital Reports*, 3d S. vol. vi.); his conclusion being that in the lower extremity amputation should be performed at once if the condition of the patient will permit, while in the upper extremity it would be proper to delay this extreme measure until the occurrence of gangrene should render its necessity evident.

Mr. Pollock's paper is manifestly the production of a judicious practical surgeon, and confirms the good opinion we had derived from his contributions to *Holmes' System of Surgery*.

Dr. W. H. DICKINSON contributes five cases of clots occurring in the cerebral arteries, in which the evidence derived from *post-mortem* inspection went to show that the coagula were formed in their positions during life, and were not cases of embolism. The author points out that coagulation of the blood during life may depend upon any one of three conditions, or upon a combination of some or all of the same. These conditions are (1) the character of the blood itself, (2) the rate at which it moves, and (3) the nature of the surfaces over which it flows. In the cases reported by the author there was retardation and embarrassment of the circulation due to previous disease of the heart (mitral contraction in four out of the five cases) and the peculiar circumstances under which the fatal illness was first manifested. Dr. Dickinson might have added that the anatomical peculiarities of the arteries that supply the brain, their tortuous course and their passage for some distance through bony walls, render them particularly liable to become the seat of clot formation, as well as to furnish a resting place for emboli, whether arising from cardiac disease or from other causes.

Two papers follow, which we may consider together, by Mr. BRODHURST on Talipes Varus, and by Mr. NAYLER on Talipes Equinus. Mr. Brodhurst's remarks occupy but two pages, and from them we learn that twenty-two cases of congenital varus have been treated in St. George's during the past two years. The tendons divided have been the tibialis anticus, tibialis posticus, and tendo Achillis in all cases, with division of the plantar fascia and tendon of the flexor longus digitorum in severe cases as well. Splints, bandages, and Scarpa's shoe have been subsequently employed, and the importance of passive motion, friction, and galvanism in the after-treatment are particularly insisted on.

Mr. Nayler's paper is much more elaborate, and is accompanied by seven excellent wood-cuts. Mr. Nayler has observed 450 cases of club-foot, of which 169 belong to the class designated as talipes equinus, 86 of these being in males and 83 in females. Of 153 cases, in which it was noted, 41 were of the right foot only, 77 of the left only, and 35 of both feet. The author considers systematically the pathology, causes, complications, prognosis, and treatment of equinus, and has thus, we think, made a valuable addition to the literature of the subject. This form of club-foot, the author states, is rarely, if ever, congenital, and is frequently acquired late in life from various diseases or injuries of the leg or thigh, or even as an accompaniment of hysteria. We have long been familiar with a form of pes equinus not unfrequently met with after fractures or wounds of the lower extremity—the condition sometimes referred to as "pointed toe." We believe this to be entirely the result of carelessness on the part of the patient or the surgeon, and that it can always be avoided by keeping the limb in a straight direction, and watching carefully the position of the foot. Many hundreds and probably thousands of soldiers were discharged from service or invalided during the late rebellion for "deformities following gunshot wounds" when simple attention to the position in which the injured limb habitually lay, would have enabled them to be returned to their regiments able to march and to fulfil the entire duties of a soldier.

We have seen this deformity resulting from the careless use of Smith's anterior splint in cases of fracture of the lower extremity, and the frequent occurrence of the same malposition when the double-inclined plane is employed, forms one of the strongest arguments in favour of the limb being uniformly placed in the straight position.

With regard to treatment, we observe that Mr. Nayler seems more sparing in the use of tenotomy than Mr. Brodhurst.

We come next to an elaborate paper by Mr. HOLMES "On the Amputation Book of St. George's Hospital." This is an extremely important contribution to practical surgery, and is deserving of high praise as well for the amount of information it conveys as for the convenient and available manner in which that information is communicated. The recorded histories of not less than three hundred major amputations are analyzed, with many interesting particulars as to the nature of the injury or disease which rendered operative interference necessary, and the course and after-treatment of the cases. These 300 amputations have been done in 14 years, and embrace three at the hip-joint, three at the knee-joint, and three at the shoulder-joint respectively; all of the hip-joint recovered, two of the knee and as many of the shoulder. There were two "double amputations," one doing well and the other dying on the twelfth day. The youngest patient subjected to amputation was a child of three years (amputation of the arm for a burn, successful), and the oldest a woman aged eighty-one, who died from causes apparently unconnected with the operation on the thirty-eighth day.

The whole paper is so condensed (though occupying as many pages as almost any in the volume) that we must resign the hope of furnishing an abstract of its contents, merely quoting the author's conclusions upon the two points to which his inquiries have been particularly directed, and referring our readers to the paper itself for the grounds on which those conclusions are based. The first portion of the paper has for its object to ascertain the influence of age on the prognosis of amputation, and the author finds that "the risk of amputation is constantly rising throughout life, and at any given period after thirty years of age the risk is more than twice as great as it was at the same period after birth."

With regard to the *causes of death after amputation*, which are investigated in the second portion of the paper, the author's conclusions are as follows:—

"1. That a considerable proportion of cases must occur in hospital practice in which death is really inevitable, although it is not known to be so at the time of amputation, and that these cases ought to be excluded in estimating the mortality of the operation, as having no bearing on the question.

"2. That of the fatal cases which remain, in about one-half, death is due mainly to previous disease or injury.

"3. That secondary hemorrhage is hardly ever a cause of death except in persons with diseased arteries.

"4. That death from exhaustion hardly ever occurs without previous disease, obviously proved both by symptoms and post-mortem appearances.

"5. That the other hospital affections (erysipelas, diffuse inflammation, and phagedæna or hospital gangrene) are rare in subjects previously healthy, and that, as a rule, they only prove fatal when they are the precursors of pyæmia.

"6. That therefore any attempt to estimate the dangers of amputation in hospital practice, or to diminish its mortality, must be based upon a knowledge

> of the conditions under which pyæmia occurs in cases treated separately, and in patients congregated in hospital wards.
>
> "Hence the necessity for some careful method of studying the condition of the wards and of the atmosphere of the wards in various states of weather, and at various times of the day and night. It is only by a long series of observations of this nature that the assertions which have been put forth with regard to the origin of hospital diseases from germs present in the air, or deposited on the walls or furniture of the wards, can be verified or refuted."

The *dentistry* of St. George's Hospital is represented by statistical tables compiled by Mr. Vasey. The dental case-books of the hospital have been kept for eight years, and embrace the records of 11,046 cases of extraction. These are arranged by Mr. Vasey under the following headings: (1.) The number of teeth extracted in the different months of the year, permanent teeth being separated from the temporary, and the number of each in either sex. (2.) The various classes of teeth, and the number of each class. (3.) The number of permanent teeth extracted of each class. (4.) The number of permanent teeth extracted at various ages, and (5.) The number of teeth extracted through caries and other causes.

The annual reports of the Medical and Surgical Registrars, with the advertisement of the Hospital School, conclude the volume. These reports are prepared with great care, and convey an immense amount of information in a very condensed form. Any attempt to analyze them would necessarily be a failure, and we shall therefore content ourselves with extracting for our readers' benefit a few items which have struck us as being of more than ordinary interest.

The medical report is prepared by Mr. Sturges, the registrar for 1865, with the assistance of Dr. Thompson, his official successor. From this we learn that nearly 1700 patients have been admitted to the medical wards during 1865, the mortality, in round figures, being one-eighth of the entire number. Three cases of acute rheumatism proved fatal during the year, the autopsies showing cerebral embolism from heart-disease to have been the fatal lesion in two of these. With regard to the propriety of receiving hysterical patients into hospital, we quote the following, which entirely coincides with the result of our own experience: "As a rule, it may be said that cases of hysteria derived no benefit from treatment in the hospital."

A case of ascites from cirrhosis of the liver with great enlargement of the spleen had a fatal termination from accidental puncture of the epigastric artery in the operation for paracentesis.

A table is given showing the mortality of certain diseases during a period of ten years: The percentages of deaths were as follows:—

Continued fever 11.6 per cent.; scarlatina 10.4 per cent.; erysipelas 14.2 per cent.; chorea 1.8 per cent.; delirium tremens 20.8 per cent.; and tetanus 60 per cent.

A case of hydrophobia, proving fatal on the day of admission, and nearly two years after the patient had been bitten by an apparently healthy dog, is narrated in detail, but unfortunately not accompanied by any account of the post-mortem appearances.

From the much longer report of the surgical registrar, Mr. Pick, we glean the following. The first dressing for burns and scalds has been generally the ordinary calamine cerate, the parts being then swathed in cotton wool.

The trephine was used in two cases of fractured skull, death following in one on the second day, and in the other in about two weeks; in the latter the symptoms of compression had been relieved, and the patient died from pyæmia.

A curious case of vicarious menstruation was observed in an hysterical girl of nineteen years, the discharge taking place for three or four days at each catamenial period, from a wound of the forearm received four years previously.

A case of fracture of both clavicles and the sternum recovered without deformity, having been treated by position alone, without any apparatus.

Fractures of the patella were treated successfully with Malgaigne's hooks, the clamps being fixed in turns of strapping previously made to surround the limb above and below the broken bone.

Fifty-one cases of well-marked hospital gangrene occurred during the year, and the experience of the hospital tends to show that the causes of this frightful disease are not altogether those usually assigned, such as overcrowding, bad ventilation, etc. This coincides with our own experience; some of the worst cases of hospital gangrene which were seen at the Cuyler Hospital, during our official connection with it, having occurred among those soldiers who, having homes in the neighbouring village, were permitted to live out of the hospital, reporting from time to time to have their wounds examined and dressed. Local treatment does not seem to have occupied particular attention at St. George's Hospital, but the free use of opium and alcoholic stimulus is especially recommended.

In several cases of necrosis, a wash of equal parts of sulphuric acid and water was applied to the exposed bone, with the effect of rapidly dissolving it, leaving a healthy surface which soon cicatrized.

A case of tumour connected with the scapula required the excision of the greater portion of that bone, the risk of hemorrhage being greatly lessened by compression of the subclavian artery during the operation, and by beginning the detachment of the mass at its posterior edge. A case of malignant disease of the lower end of the femur was mistaken for popliteal aneurism, the femoral artery being tied, and the true nature of the disease not being discovered until after the patient's death, which ensued on the twentieth day, from pyæmia.

The use of the actual cautery, lightly applied at a red heat, is recommended in cases of synovitis.

Three cases of aneurism were admitted during the year. One, of the subclavian and innominate arteries, was greatly benefited by medical treatment alone. For an aneurism of the femoral artery at the groin, the external iliac was tied with a silver wire, death ensuing on the third day, from bronchitis. The femoral artery was successfully tied with a silver wire in a case of popliteal aneurism where pressure and forced flexion had failed of good result, the wire remaining in the limb without any inconvenience to the patient.

Thirty cases of strangulated hernia were received, the taxis being successful in fourteen, and herniotomy being practised in the remainder, with eleven recoveries and five deaths; one of the successful cases was of umbilical hernia in a male.

Dupuytren's operation for artificial anus was employed in the case of an infant of thirty days, the abnormal openings being in a protrusion through the umbilicus; the child died on the tenth day, from peritonitis. Peritonitis also proved fatal, on the third day, after lumbar colotomy in a case of complete occlusion of the rectum from malignant disease.

Lithotomy was performed three times, all successfully. In one case the incision was made upon a grooved lithotrite instead of the ordinary staff, the intention being to protrude the calculus through the perineal wound by reversing the position of the instrument; this was, however, found impossible on account of the size of the stone (which weighed over four ounces), and the operation was concluded in the usual way.

A cystic tumour of the male breast was removed by operation, the patient dying from exhaustion caused by sloughing and secondary hemorrhage.

Ovariotomy was performed twice—once successfully, and once with death in forty hours; and a fibrous tumour of the uterus was removed in the belief that it was ovarian, the bowel being ruptured in tearing through some adhesions, and the woman dying three hours after the operation.

Excision of the hip was done twice, in both cases with very good results; of the knee, four times, with two recoveries and two deaths; of the elbow, four times, with two recoveries and two deaths (one, an excision for compound fracture, traumatic gangrene necessitating secondary amputation); and of the wrist, once, with a not very satisfactory result.

Twenty-eight amputations for all causes were done during the year, of which thirteen died. Two at the hip-joint recovered, and one at the shoulder-joint died. Of the entire number, seventeen were for disease, and only eleven for injury.

The reports of either registrar are concluded by valuable statistical tables.

We cannot terminate this review without congratulating the editors, Messrs. Ogle and Holmes, and the publishers, Messrs. Churchill, upon the very valuable and elegant volume they have presented to the profession. Several of the papers—notably Mr. Clarke's on locomotor ataxy, and Mr. Holmes's on amputations—are of unusual excellence, and we doubt not will hereafter become classical; while all, with one or two exceptions, are decidedly above mediocrity. The volume is well printed and well illustrated, and gives promise of a series of unsurpassed interest and importance. Let us hope that in future volumes the editors will append an exhaustive index to the text (as in the reports of the London Hospital), and thus greatly enhance the usefulness of the work as a book of reference.

J. A., JR.

BIBLIOGRAPHICAL NOTICES.

ART. XX.—*Surgical Observations, with Cases and Operations.* By J. MASON WARREN, M. D., etc. 8vo. pp. xvi. 631. Boston: Ticknor & Fields, 1867.

THERE are two distinct ways in which a surgeon, who has seen and observed a great variety of cases, and who has made himself eminent in more than one special branch of surgical practice, may record the information, which he has acquired by assiduous improvement of unusual opportunities, for the benefit of his contemporaries and successors, and especially of those whose lot has been cast in obscurer regions, and who have rarely met with individual cases which their teacher, in his wider field, has seen in groups and in frequent recurrence.

The first method is by means of text-books or systematic treatises; the second through volumes such as that before us, which, if permitted to designate by a word not often used, we might appropriately call a "polygraph."

A good text-book is probably more generally read, and adds more to its author's reputation, for the time being, than any other form of publication; but, by their very nature, text-books, in a more or less brief period, become out of date, and are replaced by new treatises on the same subjects. Hence, we think Dr. Warren has done wisely in presenting his claims to posthumous as well as contemporaneous fame in the manner he has adopted; for, let the progress of surgical science in the future be what it may, the "cases and operations" which form the subjects of his "surgical observations" will remain both instructive and interesting, though our theories of pathology should be revolutionized, and our present methods of treatment abandoned and well-nigh forgotten.

In a short prefatory note the author modestly states that his work "contains some results of surgical experience," and the reader must make himself familiar with the contents of the book itself, before he can form an adequate idea of the great extent of that experience and the practical importance of the results thence obtained. The volume contains fourteen chapters, and is illustrated with six plates (three of them coloured) and thirteen woodcuts. The first ten chapters are on injuries and surgical diseases of the head, the face, the neck, the chest, the abdomen, the anus, the genito-urinary organs in either sex, the extremities, arteries and veins, and nerves; the eleventh chapter treats of tumours; the twelfth, of gunshot wounds; the thirteenth, embracing a number of miscellaneous cases not included under previous headings; and the fourteenth and last, containing a short but perspicuous account of the introduction of anæsthesia, both general and local, into surgical practice.

To attempt an analytical review of Dr. Warren's magnificent volume would be to undertake an impracticable task; for the immense variety and importance of the subjects discussed would require almost a textuary reproduction. Dr. Warren gives the details of no less than three hundred and seventy-three cases, the history of each conveying some practical lesson, and the range of subjects embracing almost every recognized operation from the simple extraction of a bullet to excision of the knee-joint and amputation at the hip.

A number of the more important cases have already been published, at different times, in this Journal or the medical journals of Boston, and the author has long been widely known as one of the most able and skilful surgeons of America. Till the appearance of the present volume, however, there has been no opportunity afforded of estimating the great amount of excellent surgical work which Dr. Warren has performed, and we are sure that our readers will share with us a feeling of national pride at the admirable record which is here presented.

In carefully reading Dr. Warren's book, we had marked a large number of passages which seemed to us to call for special commendation, and a few (very few) in which we detected slight omissions or verbal inaccuracies. But, on further consideration, it has seemed best to present to our readers the claims of the volume as a whole, without entering into any minute details of criticism, and to point to it as a monument—*ære perennius*—of a professional life, which has already passed beyond the quarter of a century, spent in the constant and conscientious relief of human suffering; and as a bright beacon of encouragement and hope to all that come after in the surgeon's laborious but self-recompensing career.

Dr. Warren's volume will naturally provoke a comparison with similar works which have appeared from British surgeons within the last few years, and more especially, perhaps, with the enormous volume published by Mr. Butcher, of Dublin. May we be excused the expression of a natural gratification that the work of our fellow-countryman is throughout written with a dignity and self-respecting modesty that was not uniformly characteristic of the labours of the great surgeon of Ireland?

We do not recall in Dr. Warren's six hundred pages a single expression that we could wish expunged or even modified, and the correction of a few verbal mistakes and the rearrangement of one or two slightly obscure sentences, which will doubtless be done in a second edition, will render the work, in our judgment, as nearly perfect of its kind as can be expected of surgical humanity.

Of the publishers' share in the work of Dr. Warren we need only say that the mechanical execution of the volume is worthy of its contents.

J. A., Jr.

ART. XXI.—*Reports of American Hospitals for the Insane.*

1. *Of the Pennsylvania Hospital for the Insane, for the year* 1866.
2. *Of the Western Pennsylvania Hospital, for the year* 1866.
3. *Of the Eastern Asylum of Virginia, for the fiscal year* 1865–66.
4. *Of the West Virginia Hospital, for the years* 1864, 1865, *and* 1866.
5. *Of the Eastern Asylum of Kentucky, for the fiscal year* 1865–66.
6. *Of the Western Asylum of Kentucky, for the year* 1866.
7. *Of the Northern Ohio Asylum, for the fiscal year* 1866.
8. *Of the Southern Ohio Asylum, for the fiscal year* 1865–66.
9. *Of the Illinois State Hospital, for the fiscal years* 1864–65 *and* 1865–66.
10. *Of the Insane Asylum of Louisiana, for the year* 1866.

1. THE principal numerical results derived from the medical history of the *Pennsylvania Hospital for the Insane*, for the year 1866, are as follows:—

	Men.	Women.	Total.
Patients in hospital, January 1, 1866	153	151	304
Admitted in course of the year	110	112	222
Whole number	263	263	526
Discharged, including deaths	115	115	230
Remaining, December 31, 1866	148	148	296
Of those discharged, there were cured	47	55	102
Died	17	16	33

"Of these deaths, ten resulted from acute mania; nine from organic disease of the brain (generally terminating in an apoplectic attack, and this year all being men); two from pulmonary consumption; three from old age; one from typhus fever; two from disease of the heart; one from epilepsy; and five from the gradual exhaustion of chronic insanity, attended, as it so often is, by defective nutrition."

When treating of the supposed causes of mental alienation, as illustrated by all the cases hitherto received at this hospital, Dr. Kirkbride says:—

"Three hundred and ten males, and twenty-four females, are reported as having their insanity caused by intemperance. That intemperance is steadily on the increase in both sexes and with all classes of people, there can hardly be a question. It is indeed rapidly becoming the great vice of our age and country, giving to the criminal courts the largest share of their business, filling up the wards of our hospitals and other charitable institutions, crowding our almshouses, and blighting the fairest hopes and brightest anticipations of whole families in every walk of life. In its immediate and secondary results it assumes an importance that can hardly be overestimated. * * * If it may be called a disease, intemperance is really a most intractable one. It is infinitely more difficult to manage than insanity, and although the latter has often (incorrectly perhaps) been called the greatest of human afflictions, intemperance is not a less serious one. The curability of insanity, when promptly and properly treated, is more than 80 per cent., while every one knows that cases of intemperance would present a much less favourable record: and as regards relapses, while in insanity they are only occasional, with the intemperate they are of extremely common occurrence."

The doctor thinks that one cause of the increase of intemperance is "the familiar use of stimulants for nervous feelings." As a check upon this, it is his opinion that "stimulants that are given to nervous patients should come from the apothecary; like other medicines, they should be combined with ingredients that would somewhat disguise their true character, and they should be taken in measured quantities and at fixed times, as other liquid medicines are commonly given. It may not be necessary to have the bottles from which they are taken labelled "Poison," but it should be very clearly understood that the contents are of a character that can be used safely only under the direction of the physician, who should himself feel all the great responsibility he assumes in their frequent prescription."

As the chapel and the lecture-room are becoming more and more *a power* in the treatment of the insane, we extract from this report a paragraph which shows the extent to which that power is employed in this hospital:—

"For the first time, I am able to report that at the Department for Females every evening in the week is now provided with some means of breaking up the monotony of the wards formerly so universal in institutions for the insane. It is not many years since the listless condition of the patients in their badly lighted halls, without any means of passing the dreary hours that came upon them every day between their evening meal and bedtime, was certainly one of the saddest sights witnessed in too many of these establishments. In this hospital, of the seven evenings of the week, for nine months of the year, one is now devoted to reading of the Bible and sacred music; three to lectures, exhibitions of dissolving views with music, or concerts, in the lecture-room; two to light gymnastic exercises, with music, in the new hall put up expressly for that purpose; and one to tea-parties at the resident officers' apartments, and at which all the officers are generally present. These last are composed of as many patients as the dining-room will accommodate, and the Matron's weekly parties have now become one of the regular means of passing our evenings."

In allusion to the insufficiency of hospital accommodations in Pennsylvania, Dr. Kirkbride says:—

"Another State institution for the insane cannot be provided too soon; there are those now suffering from the want of it in numbers quite sufficient to fill every ward, were it ready to-day; and it can hardly be that any tax-payer of moderate intelligence, who carefully calculates his own share of the expense, would object to such an employment of a portion of the funds of the commonwealth. If they did not directly benefit some one of his own household, sooner or later they certainly would that of some neighbour, who would receive a relief that would cause him ever to think gratefully of his government, whose acts of beneficence should always redeem it from the common charge of thinking only of political interests, and of being governed solely by selfish influences."

2. "During the entire year," says the report of the *Western Pennsylvania Hospital* for the year 1866, "the institution has been crowded to excess, and it has been with great difficulty, at times, that many of the patients who arrived

could be furnished with comfortable quarters. This excessive crowding of the various wards of the hospital has resulted, as every violation of hygienic laws will do, in a deterioration of health, and an increased bill of mortality. * * * Another year will, in all probability, bring with it partial relief from our present condition, by the finishing and furnishing of the western extension to the hospital, and will find the institution better prepared to meet the rapidly increasing demand on its resources for the cure or amelioration of the insane of Western Pennsylvania."

	Men.	Women.	Total.
Patients in hospital, January 1, 1866 . .	111	93	204
Admitted in course of the year . . .	76	59	135
Whole number	187	152	339
Discharged, including deaths	69	64	133
Remaining, December 31, 1866 . . .	118	88	206
Of those discharged, there were cured . .			50
Died			39

"Six deaths were caused by consumption, six by old age, four by dysentery, two by exhaustion of chronic mania, two by chronic enteritis, one by exhaustion of acute mania, two by paralysis, four by diarrhœa supervening in cases of chronic mania, two by diarrhœa in cases of acute mania, one by gastritis, two by erysipelas, one by pericardial dropsy, one by cholera morbus, one by apoplexy, one by peritonitis caused by obstruction of biliary ducts, one by acute mania complicated by enteritis established before admission by severe medication, one by typhoid fever, one (a case of melancholia) from persistent refusal of food."

In reference to one of the patients who died, Dr. Reid says: "His condition when admitted was that of complete exhaustion, and how well the attempt, to use the language of his physician, 'to reduce him to a shadow, by bleeding, low diet, purgation, and salivation' (which was practised before he was placed in the hospital), succeeded, and how utterly impossible it was 'to build up a new structure,' the preceding statement reveals."

This reminds us of years that have gone, the years of battle against the lancet.

In this report, as in one emanating from the same source in a former year, the practice of committing insane criminals to the ordinary hospitals is condemned, and the method of avoiding it discussed. "The erection," says Dr. Reid, "of a 'Criminal Lunatic Asylum,' in a part of the State easy of access, into which all that class might be collected, and placed under the care of proper officers, is suggested, or, if thought preferable, *hospitals might be erected in connection with the prisons*, where, from the prison physician and other officers, they would receive all the care and treatment that could be extended to them in a distinct establishment.

"If this latter plan should be adopted and carried out, the expense of maintaining a separate institution, as well as the cost and excitement of their removal from and perhaps back to the prison would be avoided, and all attempts at *feigning insanity* to accomplish a discharge or transfer would be certainly precluded."

3. Robert M. Garrett, M. D., was appointed by the Board of Directors as Superintendent of the *Eastern Lunatic Asylum*, at Williamsburg, Virginia, and entered upon the duties of his office in March, 1866. The report of the institution for the year ending September 30, 1866, is signed by him.

He says: "On the retreat of the Confederate forces, under General Johnston, from the peninsula of Virginia, and its occupancy by the army of the Potomac, under command of General McClellan, the Eastern Lunatic Asylum, in May, 1862, passed into possession of the military authorities of the United States. His Excellency the governor of Virginia, in the midst of civil strife, alive to the call of humanity, provided for the comfort of the unfortunate lunatics by forwarding to them funds and a medical supervisor. It was not, however, until some time after the cessation of the late war that the present reorganization was effected."

The establishment was restored to the authorities of the State of Virginia on the 1st of November, 1865.

	Men.	Women.	Total.
Patients in hospital at that time	84	91	175
Admitted to September 30, 1866	31	31	62
Whole number	115	122	237
Discharged, including deaths	19	12	31
Remaining, September 30, 1866	96	110	206
Of those discharged, there were cured . .	4	5	9
Died	9	6	15

Of the whole number of patients in the course of the year, the insanity of 18 men and 20 women, total 38, is attributed to "the war."

Thirty-five of the patients, 16 men and 19 women, are coloured persons.

From Dr. Garratt's brief report we make the following extract:—

"That the late events which have transpired in our country have added largely to the list of the insane, I cannot doubt. Many recent cases received here are clearly to be traced to the excitement, deprivations, and horrors of the late war, and many more will be added to the list. It is safe to calculate that, before this time next year, this asylum will be much crowded, if not filled to overflowing. It is our intention to accommodate the largest possible number; not only as a matter of duty, but as a measure of economy to the State, so as to prevent the necessity of either enlarging this institution, or of building another."

4. It is several years since the preliminary measures were taken, and a legislative act was passed, for the erection of a hospital for the insane in West Virginia. It was decided to place the new institution in the town of Weston. "The south one story wing" of the building having been completed, the hospital was opened on the 22d of October, 1864, under the superintendence of Dr. R. Hills, well known for his successful management of the Central Ohio Hospital for the Insane.

The first annual report of the *West Virginia Hospital for the Insane* is dated a little more than two months after the opening, and at the close of the calendar year just mentioned. The number of patients received up to that time was 21, of whom 6 were men and 15 women; and no one had been discharged.

In allusion to the building, the report says: "We have here the beginning of a most substantial and magnificent hospital for the insane, unsurpassed, so far as constructed, by any other one anywhere, and should it be completed in like manner, it would be one of which not only the State, but the nation might be proud."

From the second annual report we extract the general medical statistics for the year 1865.

	Men.	Women.	Total.
Patients in hospital January 1st . . .	6	15	21
Admitted in course of the year . . .	22	14	36
Whole number	28	29	57
Discharged, including deaths	9	8	17
Remaining, December 31st	19	21	40
Of those discharged, there were cured . .	5	3	8
Died	1	2	3

"The three deaths were all of them sudden, two of them from epilepsy, and one from apoplexy."

Progress was made, in the course of the year, in the erection of a barn, and in the "extension of the heating apparatus." Dr. Hills recommends the purchase of more land, and the resumption of the construction of other sections of the hospital.

The third annual report, in consequence of a change of time for the expiration of the official year, embraces only the first nine months of the calendar year 1866.

	Men.	Women.	Total.
Patients in hospital, January 1, 1866	20	20	40
Admitted in nine months	6	8	14
Whole number	26	28	54
Discharged, including deaths	4	7	11
Remaining, September 30, 1866	22	21	43
Of those discharged, there were cured			6
Died			4

There were eighty applications for admission, but only fourteen could be received, as all the room was occupied. Another section of one wing has been begun. This report is almost wholly devoted to the material interests of the establishment.

5. In their report for the official year ending with September 30, 1866, the Board of Managers of the *Eastern Lunatic Asylum*, of Kentucky, recommends:—

"1. The purchase of more land for the asylum.

"2. The erection of another building capable of holding two hundred patients.

"3. Provision for insane negroes."

Dr. Chipley, in his report, portrays at considerable length the necessity of enlarging the buildings, and the advantages which would accrue from such enlargement. In regard to the third recommendation of the managers, he says: "The Legislature has already indicated its purpose to make some provision for insane negroes. * * * Already applications for the admission of coloured persons are multiplying, and no provision has been made for their relief. * * * In my report for 1857, I submitted the propriety of providing for the relief of this class of persons. Such provision is more imperatively demanded since the negro, unprepared for such responsibilities, has been suddenly, and without suitable training, thrown upon his own resources."

	Men.	Women.	Total.
Patients in hospital October 1, 1865	152	103	255
Admitted in course of the year	15	22	37
Whole number	167	125	292
Discharged, including deaths	19	22	41
Remaining, September 30, 1866	148	103	251
Of those discharged, there were cured	9	15	24
Died	5	5	10

Causes of death.—Cancer, 1; phthisis, 4; dropsy, 1; exhaustion, 3; general paralysis, 1.

Upon the subject of curability as influenced by sex, Dr. Chipley remarks: "During the first forty years of the operations of this institution, the probabilities of cure seem to have been largely in favour of males. The proportion during that period was as 44.58 per cent. of males is to 34.18 of females. During the past two years there has been a remarkable change in this respect; the percentage of recoveries on admissions of females has risen to 59.18, while the males have done little more than hold their own at 44.68 per cent." This change is attributed to the earlier admission of females, after the attack, and to the less crowded condition of their wards.

6. It will doubtless be remembered that, a few years ago (Nov. 30, 1860), the *Western Lunatic Asylum*, of Kentucky, was destroyed by fire, and that after a part of the new building was constructed the operations of the institution were resumed in it. In the report for 1866 we are informed that the whole structure is nearly completed.

	Men.	Women.	Total.
Patients at the beginning of the year	74	69	143
Admitted in course of the year	77	57	134
Whole number	151	126	277
Discharged, including deaths	36	25	61
Remaining, December 31, 1866	115	101	216
Of those discharged, there were cured	23	8	31
Died	9	16	25

"With enlarged accommodations," says the report, "there has been a correspondingly increased number of patients admitted during the year just closed; and, considerable as the increase has been, we still fall short of the constant demand for room, more particularly for male applicants; and, even with a completed building, I have doubt whether we will be able to admit all who will apply."

A large proportion of the patients admitted were in a condition of chronic insanity.

"Jails, county poor-houses, and work-houses have poured their flood of chronic insane, paralytics, and imbeciles upon us, and will continue to do so until all are provided for."

A large part of Dr. Rodman's report is devoted to the consideration of two important subjects: hospital provision for insane negroes, and further accommodations for the white insane of the State.

7. The *Northern Ohio Lunatic Asylum*, as appears by the report for the official year ending October 31, 1866, is about to be enlarged by the addition of two sections to the wings.

	Men.	Women.	Total.
Patients in hospital October 31, 1865	70	68	138
Admitted in the course of the year	60	76	136
Whole number	130	144	274
Discharged, including deaths	57	73	130
Remaining Oct. 31, 1866	73	71	144
Of the discharged, there were cured	33	43	76
Died	5	8	13

"Of the deaths, two were of pulmonary consumption, one of apoplexy, one of paralysis, five of exhaustion, one of peritonitis, one of pneumonia, one of typhoid fever, and one was caused by injuries inflicted by the patient upon himself before admission."

"We have endeavoured to provide suitable amusements and recreations for the inmates. In addition to the usual in-door amusements, a billiard table has been procured, which affords cheerful recreation to the patients. The grounds in the rear of the male wards have been under-drained and graded, affording us a fine play-ground, where the male patients engage almost every pleasant day in a game of bass ball or cricket. These have proved to be very attractive games to the patients, affording them amusement and healthful exercise."

Doctor Stanton's report is very brief.

8. Two additional sections to the wings of the *Southern Ohio Lunatic Asylum* were begun in the course of the official year ending Oct. 31, 1866. These structures, when completed, will finish the building according to its original design.

	Men.	Women.	Total.
Patients in hospital Nov. 1st, 1865	77	96	171
Admitted in course of the year	44	59	103
Whole number	121	153	274
Discharged, including deaths	40	57	97
Remaining Nov. 1st, 1866	81	96	177
Of those discharged, there were cured	26	35	61
Died	2	4	6

Causes of death.—Consumption, 2; paralysis, epilepsy, suicide, and intestinal hemorrhage, 1 each.

In treating of the liability to a recurrence of insanity in case of cure, Dr. Gundry says: "Insanity leaves behind it a flaw, which may require a greater or less strain to detect hereafter, but it is present, even if unnoticed, and the dictates of common prudence require due precautions to be observed, lest it endanger the future integrity of his mental operations. The evil cannot be ignored by closing the eyes to its existence. It must be calmly considered, and quietly and resolutely encountered. But, on the other hand, it is not necessary or beneficial to be constantly surveying the defect. An undue or excessive attention to it would be as unwise as a reckless disregard of its presence. It leads to an excessive timidity with reference to anything connected with it; a horror in contemplating its cause—a constant dread which so often brings on the very evil dreaded; and which, as it clouds the whole of human life, is itself a greater calamity than any temporary disease. * * * * Self-control and self-restraint must be assiduously cultivated. Action—properly regulated action, of body and mind—is especially necessary."

9. In the course of the two years embraced by the report now before us from the *Illinois State Hospital*, the extensive buildings of that institution have been completed according to the original design, by the erection of "a lateral wing one hundred feet by forty-three feet, and a transverse wing, one hundred feet by forty-three feet. * * * The addition thus made will bring its capacity equal to the requirements of five hundred of the insane."

Patients in hospital Dec. 1, 1864	301
Admitted in two years	446
Whole number	747
Discharged, including deaths	429
Remaining December 1, 1866	318
Of those discharged, there were cured	146
Died	48

Causes of death.—Consumption, 13; epilepsy, 7; paralysis, 4; typhoid dysentery, 4; aneurism of heart, 4; erysipelas, 4; chronic diarrhœa, 2; typhomania, 2; abscess, 2; apoplexy, 2; spermatorrhœa, 2; diphtheria, 2; cancer of uterus, 1; pneumonia, 1.

A large part of Dr. McFarland's report is devoted to a discussion of the subject of the proper method of provision for the custody and care of the incurable insane. We find in this essay one important point which we do not recollect to have been made in any of the many arguments of the question. We quote the language of the author in its regard, together with the conclusion to which he arrives. "Asylums specially provided for the incurably insane would be extremely liable to the evils resulting from an inadequate supervision on the part of boards of trust. In this country, men of means and leisure to afford the time required by such responsibilities, are, unfortunately for our object, not numerous, and are particularly liable to be wanting where little of honour or pleasure can accrue from the most faithful discharge of duty. Success of some sort must be the attraction, to warrant the sacrifice involved in the control of any institution for the insane. A triumph in a branch of social science—a success in the practice of economics—would be the highest end sought in an asylum for incurables; and the English passion for serving on boards of trust does not find imitators enough here to properly fill the posts in question, where such are the only rewards. And it is as certain as any fact of the future can be, that without intelligent and vigilant boards of control, such institutions would become the abodes of every evil that follows irresponsibility, when found in a charge of such magnitude. The danger to private rights incurred by the existence of insane asylums owned and controlled by individuals, has been loudly proclaimed; but it is a doubt if they are half as pregnant of evil as gatherings of large numbers of the pauper classes regarded as beyond cure, and having their safeguard in the loosely-fitting sense of responsibility held by those likely to give them their time and service.

"From the foregoing observations the opinion may be gathered, that no institutions for the insane of this State should be countenanced which are not equal to the standard of the times in a full adaptedness to the cure and comfort of the insane of all classes; that institutions of cheap construction, designed to make cheapness of management a leading feature, will be found to disappoint the expectations of their promoters, and afford no enduring satisfaction to the people of the State."

10. The *Insane Asylum*, a State institution of Jackson, Louisiana, as appears by the report for 1866, is not organized like the hospitals of the more northerly States, with a resident physician as superintendent. Its medical duties are performed by Dr. Preston Pond, whose report occupies less than one page.

	Men.	Women.	Total.
Patients in hospital Dec. 31, 1865	80	92	172
Admitted in course of the year	15	9	24
Whole number	95	101	196
Discharged, including deaths	13	12	25
Remaining Dec. 31, 1866	82	89	171
Of those discharged, there were cured	4	4	8
Died	4	6	10

Causes of death.—Phthisis, 3; epilepsy, 2; marasmus, 1; softening of brain, 1; general paralysis, 1; typhoid fever, 1; chronic diarrhœa, 1.

The larger part of this pamphlet is occupied by the report of the administrators (trustees) of the hospital. In this, as in nearly all of the recent reports which we have seen from the hospitals in the Southern States, the subject of insanity among the freedmen, and the proper method of supporting the coloured insane, is discussed. P. E.

Art. XXII.—*Transactions of the New Hampshire Medical Society, at its Seventy-fifth and Seventy-sixth Anniversaries.* The first held at Portsmouth, June 27, 28, 1865; the second at Hanover, June 5, 6, 1866. 8vo. pp. 125. Manchester, N. H., 1866.

The session of 1865 was opened by an address from the President, Dr. J. Clough, of Lebanon. This address has one recommendation—its conciseness; we might also add another, the plain common sense with which its leading theme, the influence of the mind over the body, is treated; or, more properly speaking, with which it is sketched in outline. It could scarcely be expected that a subject so important and of such wide extent as the influence exerted by the exercise of the mental and emotional faculties, over the physical energies and the regular action and nutrition of the human organs, could be thoroughly discussed in the space of some four octavo pages.

The "Significance of Pain," is the subject of a paper, read before the Society at its session of 1865, by Dr. A. B. Crosby. Though the subject is by no means very profoundly treated, or examined fully, yet the remarks offered by Dr. C. in respect to it are in the main correct and full of interest. The object of the author is to show that, as great an evil as pain is, it serves man well, inasmuch as it insures the preservation of the species, warns us of the invasion of disease, while its severity may be measurably increased or diminished in proportion as we are petulant or philosophic. The following are the propositions advanced and defended by Dr. C.

"1st. Pain is not an unmixed evil, but is a beneficent gift of God, designed for the self-preservation of all animals, each being endowed with this sense to an extent only sufficient to insure this result.

"2d. Even in disease pain is not an unmixed evil, but, on the contrary, is one of the most valuable pathognomonic signs.

"3d. The intensity of pain is largely dependent upon the mental condition of the person suffering."

A sensible paper on "Practical Medicine," is communicated by Dr. T. J. W. PRAY. The points which Dr. P. is especially desirous of enforcing are: A proper dignified silence in respect to the pretensions and temporary prevalence of any form of empiricism. The success of every theory based on error and every practice founded thereon must, necessarily, after a popularity of longer or shorter duration, according as they are more or less specious, come to a close. The true alone continue and in the end triumph. Dr. P. contends for the adoption by the practitioner of a more simple means of medication than that usually pursued: of less complex and, as far as possible, less repulsive formulæ for prescriptions. Dr. P. would have physicians in their efforts to conduct disease to a favourable termination, without rejecting entirely the employment of drugs, to trust more to the powers of nature, and to assist these by a proper diet and regimen, rather than by a resort in every case to active medication.

In the remarks of Dr. P. there is, strictly speaking, nothing new; still, old things may be very profitably reconsidered and enforced until they shall attain to the place they should by right occupy.

In the report on "Epidemics," by Dr. S. M. WHIPPLE, there are many truths stated, which are generally recognized by the profession. To the success of the attempts at an explanation of those truths made by Dr. W., we cannot, however, assent. We do not believe that facts will bear him out in evidence of the validity of his theory of the etiology of epidemic diseases. "The generally accepted theory concerning epidemics," he remarks, "is, in my opinion, erroneous. They do not depend for their severity or continuance upon the '*constitutio aeris*,' the constitution of the atmosphere, so much as upon the predisposing causes which lie inherent within the human system. Epidemics of a special character prevail only at long intervals. Do these depend upon some material influence of the atmosphere, or upon a depraved condition of the vital functions? In the normal state there is a constant disintegration and reproduction of cells, and an equable and reciprocal balance between the processes, constituting health in the economy. But if the supply of pabulum is diminished in quantity or altered in quality, this natural equilibrium is destroyed, and disease results as a necessary and natural consequence. If a habit be continued then by any one, or any number of persons, in a given locality for a series of years, which tends insidiously to destroy this natural equilibrium of assimilation, the fibrinous plasma ceases to be properly elaborated, the red globules decrease in quantity, the albuminous element becomes excessive, and a condition of disease is developed throughout the economy. They who are victims to epidemic disease are in this condition, and however slight the exciting cause may be, whether from the atmosphere, from irregularities, or from contagion, the most alarming and malignant diseases are ushered in. Aerial or malarial causes alone, without the predisposing tendencies inherent in the system, would affect all alike, and healthy tissue would become equally impressed with that which is diseased, which is contrary to the experience of all. The food for epidemics, therefore, is accumulating in the blood of its victims in different proportions, until one or a few in a given locality, are seized with disease, then the '*malaria of contagion*' affords a sufficient exciting cause to ignite the latent spark in others of like condition, and the deadly malady spreads with unmitigated fury."

With all its mingling of truth and error, giving to it a specious appearance of truth, the want of accuracy in this explanation of the origin and spread of epidemics, when compared with the wide range of facts we possess, bearing upon the subject, will quickly appear.

The *Transactions* of the Session of the New Hampshire Medical Society for 1866 open with an address from the President, Dr. W. D. BUCK, which is marked throughout by sound common sense. It is somewhat fragmentary, it is true, in its character, and composed in a slip-shod familiar style, bearing, however, with all its very plainness and contempt of polished diction, much to interest and to instruct. Speaking of particular operations in Surgery, as acquiring, in consequence of the benefits which have been derived from them in the hands of certain distinguished operators a kind of fashionable pre-eminence, Dr. B. remarks:

"A distinguished surgeon in New York city, twenty-five years ago, said, when Dupuytren's operation for relaxation of the *sphincter ani* was in vogue, every young man who came from Paris found every other individual's anus too large, and proceeded to pucker it up. The result was that New York anuses looked like gimlet-holes in a piece of pork. It seems to me that just such a raid is being made upon the uterus at this time. It is a harmless unoffensive little organ, stowed away in a quiet place. Simply a muscular organ having no function to perform save at certain periods of life, but furnishing a capital field for surgical operations, and is now-a-days subject to all sorts of barbarity from surgeons anxious for notoriety. Had Dame Nature foreseen this, she would have made it iron-clad. What with burning and cauterizing, cutting and slashing, and gouging, and spitting and skewering, and pessarying, the old-fashioned womb will cease to exist, except in history. The *Transactions* of the National Medical Association for 1864 has figured one hundred and twenty-three different kinds of pessaries, embracing every variety, from a simple plug to a patent threshing machine, which can only be worn with the largest hoops. They look like the drawings of turbine water-wheels. or a leaf from a work on entomology. Pessaries, I suppose, are sometimes useful, but there are more than there is any necessity for. I do think that this filling the vagina with such traps, making a chinese toy-shop of it, outrageous. Hippocrates said that he would never recommend a pessary to procure abortion—nay, he swore he never would. Were he alive now, he would never recommend one at all. If there were fewer abortions there would be fewer pessaries, and if there were fewer pessaries there would be fewer abortions. Our grandmothers never knew they had wombs only as they were reminded of it by the struggles of a healthy fœtus, which, by the by, they always held on to. Now-a-days, even our young women must have their wombs shored up, and if a baby accidentally gets in by the side of the machinery, and finds a lodgment in the uterus, he may, perchance, have a knitting-needle stuck in its eyes before he has any. It is the easiest thing in the world to introduce a speculum and pretend to discover ulceration of the os, and subject a patient to this revolting manipulation once or twice a week, when there is, in fact, nothing the matter. By some practitioners, all diseases which occur in the female are attributed to the uterus. In this class are especially to be included all such as make of the abnormal conditions of the uterus a speciality."

A very neat *address to the members of the New Hampshire Medical Society* by the President of Dartmouth College, Rev. Asa D. Smith, follows. In it is pointed out in very proper and discriminating terms the importance, usefulness, and dignity of the medical calling, and its claims to the rank of an indispensable art, and of a high-toned and truly learned profession.

A paper on "The Abuse of the Topical Treatment of Diseases of the Uterus" is communicated by Dr. Albert Smith. The subject is treated with much candour and truth. Whilst he recognizes the very great good which many patient's have experienced from the direct application of remedial agents and means to the diseased womb, the practice being resorted to only in proper cases, and in such. only, with the utmost care and caution, Dr. S. would impress upon the mind of the practitioner who designs to direct his especial attention to the treatment of uterine accidents and diseases, that the exploration of these is not always satisfactory, and that an injudicious and ill-timed resort to local remedial measures for their removal or alleviation is liable to produce much harm. That many of the diseases, incurvations and displacements which are now subjected to a severe and protracted local course of treatment, could have been successfully treated without them, at the same time, with less trouble to the practitioner, and certainly with less danger and suffering to the patient.

We have next in order an *Oration* by Dr. Charles F. P. Hildreth, of Concord. The theme discussed is "The True Practice of Medicine." The subject is concisely, but very judiciously treated. No one who has a just estimate of the true character of our profession will dissent from the orator, when he says in his peroration :—

"In the true practice of medicine we have a profession worthy of man's highest ambition. Adopting which he stands upon a platform broad and catholic, its foundation the eternal principles of truth. His *materia medica* embracing the good wherever found, discarding everything improper and injurious. An upright and candid course the only dealing with his patients, and the golden rule his sole guide of conduct toward his brother physicians. When this system shall prevail, although it may not bring the desired millenium, yet it will be an era of great joy to man, and the death knell of quackery. During our day and generation, the physician who follows the *true practice of* medicine may not acquire riches or renown, but something far better will he gain—the possession of a clear conscience and a life without offence. It will win for him the esteem of the good and true. At the bedside of suffering it will nerve him with greater strength to battle with the death angel for a still longer lease of life; and when his labours are finished, his reward will be the assured satisfaction that his duty was rightfully performed."

The *Transactions* for 1866 close with a short "Report on Surgery." To the few general remarks advanced by Mr. ROBINSON, its author, in reference to certain questions in surgical practice, we have nothing to object. Of their accuracy no one we think will doubt. They are, however, too detached, we might almost say too superficial, to permit of their influence being felt in the furtherance of that improvement in surgery which is in progress, but which cannot be considered complete until the necessity for a resort to the knife shall become a rare exception to, rather than the rule of practice.

D. F. C.

ART. XXIII.—*Obstetrics; the Science and the Art.* By CHARLES D. MEIGS, M. D., etc. etc. Fifth Edition, revised. With One Hundred and Thirty Illustrations. 8vo. pp. 760. Philadelphia: Henry C. Lea, 1867.

WE congratulate the medical public upon the appearance of this fifth edition of Dr. Meigs' work on Obstetrics. The treatise, so far as it regards the science and the practice of this important department of medicine, ranks, unquestionably, among the very best that have been issued, whether it be viewed as a manual for the use of the student, or as a handy book of reference for the young practitioner in cases of doubt and difficulty. The present edition presents the evidence, in almost every paragraph, of careful revision, rendering the work throughout still better for instruction in the science and the art of midwifery than it was before. We trust that the bodily health and mental powers of its distinguished author may long be continued, so that when other editions of the work shall be called for, they may appear under his personal revision.

We sincerely regret, however, that in considering some of the more prominent of the diseases incident to the puerperal female and to the new-born infant, Dr. M. should still adhere so pertinaciously to views, as well pathological as therapeutical, which are now rejected as incorrect, by the majority of the leading physicians of Europe and of this country, and that he should have resented with so much disdain every dissent from him as to their validity. We admit that a mere *expression of opinion* on the part of a medical reviewer is of no more value than the opinion of any other medical man of equal attainments, but when the reviewer presents a long series of facts carefully collected by different practitioners, labouring in widely separated fields, and all tending to one result, and that result decidedly opposed to the views held by the author he may have occasion to review, it would not be very unreasonable to suppose that these facts would be taken into consideration by said author and refuted if not reliable, or the deductions drawn from them shown to be erroneous if they be so. If, however, they are found to be correct and true, we do not see what humiliation any one can suffer who, in accordance with the truths thus revealed, shall modify any pet views he may have entertained in relation to the nature, seat, or causation of disease, or any cherished course of treatment he may have imagined to be the right one. D. F. C.

Art. XXIV.—*A Memoir on Osteo-myelitis.* By John A. Lidell, A.M., M.D. Late Surg. U. S. Vols., &c. &c.

Dr. Lidell, the author of the above memoir, which was read before the New York Academy of Medicine, Dec. 19, 1866, is favourably known as a military surgeon, and has contributed to this Journal some of the most valuable papers on the surgery of the war that have appeared through other than official sources. Anything, therefore, from his pen on a subject which he, in common with all our military surgeons, have seen so much, will be received with interest. The paper is based upon studies of seventy-two cases, and purports to be a digest of a more extended report which has been prepared for the United States Sanitary Commission.

There is perhaps no subject of surgical pathology which has excited more general attention of late years, yet regarding which there are more conflicting views both as to its nature and limitation, than osteo-myelitis. The name, as generally attributed to Nélaton, 1834, is an unfortunate one, since it is capable of being applied to an inflammation of the lining membrane of a bone, as well as to an inflammation common to the lining membrane *and* the bone. The first of these, medullitis, has from the first been recognized, while primary involvement of the osseous tissue is very rare, and general osteitis following or accompanying acute medullitis among its most unfrequent complications. In chronic medullitis, on the other hand, the bone becomes affected in varying though conspicuous degrees, which are determined by the nature of the exciting cause in each case. It is in regard to such conditions that we more specially need instruction; and it is natural to presume that any one writing upon osteo-myelitis at this day would find small reason for writing at all if he could neither contribute to our meagre stock of knowledge by new facts of his own, nor set opinions to rights by confirming or refuting the alleged facts of others. In endeavouring to accomplish the first he would attempt to define the exact signification of osteo-porosis in a long bone; whether or no it is a progressive condition from below upwards; what is the exact nature of the breaking-down process in the medulla; and what are the relations of osteo-myelitis to pyemia; and of the second, to give hearing to other observers, and if unable to refute their statements, to freely acknowledge them by giving them the proper place in the literature of the subject.

But Dr. Lidell's memoir, although giving us a graphic description of familiar conditions, and furnishing us with an elaborate, though incomplete, bibliography, is singularly deficient, we regret to say, in any systematic attempt to throw light upon the above mooted points. He makes no allusion to the loosening of the periosteum in osteo-myelitis of stumps—a condition dwelt upon by Valette, and confirmed by others—merely touches on the inflammatory involvement of bone, and omits all mention of the limit of inflammation in cases of compound fracture being determined by the position of the nutritious foramen of the shaft. At the same time, he has systematically ignored all observations which have appeared south of New York—no mention being made of Dr. T. G. Morton's successful amputation at the hip-joint for chronic osteo-myelitis; nor even in the way of refutation, which would be desired if the observations are erroneous; or of other original matter, which has appeared in a recent volume of this Journal.

We await with interest the appearance of his extended report, in which the subject is to be treated at greater length. H. A.

Art. XXV.—*Treatment of Fractures of the Lower Extremity by the Use of the Anterior Suspensory Apparatus.* By N. R. Smith, M. D., Professor of Surgery in the University of Maryland. 8vo. pp. 70. Baltimore: Kelly & Piet, 1867.

We regret to have to say that this volume can scarcely add to the deservedly high reputation of its author, and is but adapted to produce a feeling of disappointment in the minds of its purchasers. The anterior splint, or rather the principle of suspension in the treatment of affections of the lower extremity, is of enough importance to merit a much more thorough and careful consideration than is here given to it.

The author's style is frequently obscure, and at times scarcely characterized by that dignity which befits a scientific essay; and the only really valuable portion of the book is the collection of cases at the end, which, with one exception, are sufficiently well reported, and would have formed an appropriate and useful contribution to one of our numerous medical journals.

The volume is badly printed, though with much pretension to elegance; and the wood-cuts, though tolerably numerous, are not particularly well executed. The publishers have thought fit to append a long catalogue of their stock of medical literature, which being printed in exactly the same style as the text of the book itself, is apt to mislead the hasty purchaser into the impression that he is buying a work nearly one-half larger than that which he actually obtains.

J. A., Jr.

Art. XXVI.—*Practical Dissections.* By Richard Hodges, M. D. Formerly University Demonstrator of Anatomy in the Medical Department of Harvard. Second Edition, thoroughly revised. 12mo. pp. 286. Philadelphia: Henry C. Lea, 1867.

This little book appears in its second edition in an entirely new dress, and is presented to the profession through a Philadelphia publisher. Thirty-two pages have been added to the original impression, and its title-page informs us that the work has been thoroughly revised. We notice that the general rules to be observed in dissecting have been re-written; and a number of typographical errors, pointed out in this Journal in a notice of the first edition, have been corrected. The result is creditable to Dr. Hodges, and indicates that if, with its minor deficiencies, the book has passed through its first edition, that now, with these deficiencies in part supplied, and its subject-matter increased, it may command an increased sale.

The author shields himself from the charge of insufficient description in his opening sentence of the Preface, where he states that "the *Practical Dissections* is not a treatise on anatomy, nor in any way a substitute for one. It is intended to be simply a practical guide in the ordinary dissections of the medical student; describing on the same page, and in connection, the muscles, nerves, arteries, veins, or other structures which are conjointly exposed." We therefore have nothing to say to the extreme incompleteness of those portions having important surgical relations, as for example in the account of the male perineum. We cannot refrain from regretting, however, that in an elementary work descriptions of organs should occasionally be overloaded with the absurd nomenclature of the old anatomists, especially since efforts have been made on the part of prominent teachers to institute a simpler one. Thus, in the account of the external ear, "innominate fossa" is employed in preference to "fossa of the helix,"—while "scaphoid fossa," which is given in all authorities we are familiar with as synonymous with "innominate fossa," is applied to the "fossa of the anti-helix" (fossa triangularis). The equally ancient classification of cranial nerves, according to Willis, is adhered to in preference to that of Soemmering, which is in all respects its superior. Again, no relations, surgical or otherwise, are given to the parts described; while in no instance is a function assigned to any muscle, membrane, or nerve. These omissions present objections to those who believe that simplicity of statement and an early recognition on the part of the student of the uses of organs are important features in teaching. But they are errors of omission only, not of commission. We find the author at all times at ease with his subject; and it would, we conceive, be a difficult matter to state the same number of facts with equal conciseness and perspicuity in a smaller space.

Appended to the Dissector is a chapter, suggested by an interesting article by Luther Holden, in 2d vol. *St. Bartholomew's Hospital Reports*, entitled "Important Anatomical Landmarks and Points, capable of being Studied without Dissection, or upon the Living Subject." This is an admirable feature, and should, we think, enter into all treatises on anatomy. We cannot speak so favourably of the chapter on the anatomy of the fœtus, which is too meagre, and will not stand comparison with similar sections in other works. H. A.

ART. XXVII.—*Notes on Fractures of the Upper Extremity.* By JOHN H. PACKARD, M. D., one of the Surgeons of the Episcopal Hospital of Philadelphia. 8vo. pp. 58. New York, 1867.

No class of injuries is more interesting to the practical surgeon than that of fractures, as well from the frequency of their occurrence in ordinary experience, as from the fact that they are almost always (if we may use the term) acute cases, their treatment being generally susceptible of satisfactory completion without the weariness on the part of both patient and doctor, which is so apt to attend the management of other common surgical affections, such as ulcers, burns and scalds, or chronic affections of the joints.

The pamphlet before us contains, as we learn from a foot-note, the substance of a series of lectures (the second under a bequest of the late Dr. Mütter) delivered in April, 1866, at the hall of the Philadelphia College of Physicians. The foundation of this "Mütter Lectureship" on Surgical Pathology we regard as one of the most important provisions for the extension of medical science that has been instituted in Philadelphia for many years. It will be remembered, by our readers, that Mr. Paget's admirable lectures upon Surgical Pathology were originally written for delivery upon a similar foundation; lectures that in their published form have passed through many editions and gained for their author a deserved and world-wide reputation.

Dr. Packard is already well known to our readers as a writer upon Fractures, from having some years since translated and edited the first volume of the inimitable work of Malgaigne. In the pamphlet before us Dr. Packard has confined his remarks to the fractures of the upper extremity, and has illustrated his pages with numerous original woodcuts. The pamphlet consists of five portions, discussing respectively (1) the structure of bone and the general causes of fracture; (2) fractures of the clavicle; (3) fractures of the scapula and humerus; (4) fractures of the forearm; and (5) fractures of the lower extremity of the radius.

We are pleased to see that Dr. Packard has very clearly pointed out the beautiful arrangement of interlacing arches in the intimate structure of bones, by which their strength is so greatly increased.

In opposition to the views of Malgaigne, Hamilton, and others, Dr. Packard believes the displacement and deformity in cases of fracture to be almost entirely due to the action of the circumjacent muscles at the moment of fracture. The example which he gives of deformity produced by another cause—viz., the outward rotation in fractured thigh from the weight of the foot—seems to us, however, rather an unfortunate illustration, as the same outward rotation occasionally persists even when the foot is replaced in the vertical position; just as eversion of the knee is one of the most troublesome deformities in cases of fracture of both bones of the leg, though the foot may be most accurately adjusted to the foot-piece of the fracture box.

There is one cause of deformity after fracture to which we find no allusion in the pamphlet before us; this is the natural *elasticity* of the surrounding soft parts, without regard to any actual muscular *contraction*. This is well pointed out by M. Anger (in the case of fractures of the clavicle) in his magnificent illustrated work now in course of publication by M. Germer Baillière, of Paris. The clavicle, in the natural state, is *held down* (as it were) by the weight of the arm and the action of the muscles attached to its lower surface (especially the deltoid), and indirectly by those attached to the scapula; now, in case of fracture, most of these forces continue to act upon the acromial portion of the clavicle, while the sternal portion, separated from the rest by the solution of continuity, is tilted upwards by the natural elasticity of its ligamentous attachments, the sterno-cleido-mastoid muscle, etc. That this is correct is shown by the fact that in many cases though the shoulder be elevated, the scapula drawn backwards, and the other usual indications met, yet the deformity will remain, and in such cases can only be overcome by making direct pressure upon the outer end of the sternal fragment.

Dr. Packard follows the majority of writers in stating that after fracture of the clavicle, "pushing, pulling, and lifting are all rendered either impossible or very imperfect until union takes place." In the same view it has been generally stated that a diagnostic mark of this fracture is the impossibility of raising the arm behind the head; but as demonstrated by Velpeau there is no impossibility in the matter, a portion of the trapezius muscle substituting, though imperfectly, the function of the clavicle in steadying the shoulder, and the patient being really able to raise the arm though naturally shrinking from doing so on account of the pain attending the movement.

Dr. Packard's suggestion that fractures of the clavicle may be produced by that bone being bent over the first rib, as a stick is broken by being bent over the knee, has certainly the merit of novelty; we think, however, that its demonstration is as yet a thing of the future.

We have chosen Dr. Packard's remarks on fractured clavicle for comment, as perhaps offering a wider scope for diversity of opinion than other portions of his subject. We have found his remarks on treatment practical and judicious, as might be expected from his known reputation as a surgeon of skill and experience. We commend his well-printed "Notes" to those of our readers who may wish to refresh their recollections upon this most important branch of surgical practice. J. A., Jr.

Art. XXVIII.—*Researches upon "Spurious Vaccination," or the Abnormal Phenomena accompanying and following Vaccination in the Confederate Army during the recent American Civil War.* By Joseph Jones, M. D., Professor of Physiology and Pathology in the Medical Department of the University of Nashville, Tenn. 8vo. pp. 134. Nashville, Tenn., 1867.

These researches were published originally in the *Nashville Journal of Medicine and Surgery.* They are based upon facts observed among the troops of the "Confederate armies," and lead to conclusions in respect to the cause of the failure of vaccination to protect the system from variolous infection, and the positive disease inflicted upon the system by the employment of certain forms of spurious and contaminated virus, which, though not absolutely new, are of the highest importance in their practical bearing.

Dr. Jones, as the result of his investigations, presents the following prominent causes of the injurious effects of attempts to place the system under the influence of the vaccine infection occasionally met with: 1st. Depression of the vital forces from fatigue, exposure, and poor diet, impoverished, vitiated, and scorbutic condition of the blood of those vaccinated or yielding vaccine matter.

2d. The employment of virus from pustules or ulcers which had occurred in consequence of a deviation from the regular course of development of the vaccine disease; such deviation being due mainly to previous vaccination, and the existence of some eruptive disease at the time of vaccination. 3d. The use of vaccine lymph or crusts in which decomposition had taken place in consequence of the matter having been carried about the person for a long time, and thus subjecting it to the influence of a warm, moist atmosphere. 4th. The mingling of the vaccine virus with that of smallpox. The use of matter taken from those who had been vaccinated while affected with poison of smallpox is capable of producing a modified and comparatively mild form of variola in those inoculated, while by infection it may give rise in the unprotected to an attack of smallpox of the worst character. 5th. The employment of vaccine lymph or crusts taken from those who were labouring under erysipelas during the progress of the vaccine infection, or whose systems were in a depressed condition from improper diet, deficient ventilation, or the exhalations from patients labouring under typhoid fever, erysipelas, hospital gangrene, pyæmia, and ill-conditioned wounds. 6th. From the use of either fresh or dried vaccine lymph or crust taken from patients suffering from syphilis at the time and during the progress of vaccination.

We accede to the general truth of the foregoing conclusions. That, in order to render vaccination a perfect and an enduring protection against the infection of the variolous poison, it is essential to employ perfectly fresh, pure, and effective vaccine matter, and to be sure that when it is inserted into the arm that the patient is entirely free from disease of any kind, we have on more than one occasion endeavoured to prove, and we believe that such is now the opinion of all well informed practitioners. Whether, however, vaccine virus derived from persons who are labouring under certain diseases is capable of communicating the latter to those into whose systems it is introduced in the process of vaccination, is a question still not positively settled. From what has fallen under our own observation bearing directly upon the question, we should be induced to decide it in the affirmative. This much is very certain, that the facts that have recently been elicited in proof of the possibility of communicating other diseases than the vaccine by the use of impure or infected virus, are of too imposing a character not to render every practitioner particularly cautious to employ for vaccination no matter of the purity of which, as well as the entire freedom from disease of the individual from whom it was derived, he has not the fullest assurance. D. F. C.

Art. XXIX.—*Medico-Chirurgical Transactions.* Volume XLIX. (Second Series, Vol. XXXI.) 8vo. pp. lviii., 224. London: Longmans, Green & Co., 1866.

The present volume of this most valuable collection contains seventeen distinct papers, with five plates and three wood-cuts. In accordance with the usual custom of the *American Journal,* we propose to lay before our readers a brief abstract of these papers. Seven of the seventeen have already been reproduced with more or less detail in the "Quarterly Summary" of preceding numbers of the Journal, so that the remaining ten will alone demand our attention at present.

I. *Observations on the Effect of Coffee on the Urea and Chlorides in Health,* by Charles E. Squarey, M. R. C. S., etc. Communicated by A. B. Garrod, M. D., F. R. S.—The author's observations were made upon himself and upon two patients. The daily results are carefully tabulated, and the author concludes that the amount of urea excreted is not appreciably diminished by the use of coffee in the doses taken ($\frac{1}{4}$ oz. to 2 oz. three times a day). In two cases no marked change in the amount of chlorides was observed, while in the third case the exhibition of three half-ounce doses produced a decided increase in the amount of water passed and of chlorides, but, the patient leaving the hospital the next day, the experiment could not be repeated. In conclusion the author states that neither his patients nor himself felt the slightest ill effects from the large doses of coffee employed. The frequency of the pulse was generally slightly increased for an hour after taking each dose.

II. *Case in which the Operation of Trephining of the Spine was performed*, by SAMUEL GORDON, M. B., etc. Communicated with observations by ROBERT MACDONNELL, M. D., F. R. S., etc.

III. *An Account of an Arterio-venous Cyst in the Popliteal Nerve, for which the Limb was amputated*, by CHARLES H. MOORE, F. R. C. S., etc.—The contents of these two papers have already been presented to our readers in the number of the Journal for April, 1866.

IV. *A Case of Multiple Neuromata, Affecting the Nerves both Within and External to the Spinal Canal, some of the Tumours being of a Cystic Nature*, by SEPTIMUS W. SIBLEY, F. R. C. S., etc.—For an abstract of this paper, see the *American Journal of the Medical Sciences* for July, 1866, page 243. This paper is accompanied with a handsome plate, partially coloured, giving a good idea of the morbid appearances in the case.

V. *On Granular Degeneration of the Voluntary Muscles*, by EDWARD MORGAN, M. D., F. R. C. P.—Dr. Morgan exhibited to the Royal Medical and Chirurgical Society a patient affected with this curious disease, which has been called "Progressive Muscular Atrophy" and "Necrobiosis of the Voluntary Muscles," but for which the author prefers the name given at the head of this paper. It appears to be an idiopathic affection of the muscles themselves, no nervous symptoms being manifested during life and no changes in the nervous system being detected after death. In the patient exhibited, the progress of the disease had been materially retarded by the administration of Fowler's solution. A plate gives illustrations of the microscopic appearances in the affected muscles.

VI. *Notes and Observations on Fever on the West Coast of Mexico, in the year* 1860, by JOHN CADDY, M. D., etc. Communicated by the late THOMAS HODGKIN, M. D., etc.—The number of fever cases treated was 162, nine being of remittent and the remaining 153 of continued fever. Of these, only one proved fatal, the patient being a seaman between thirty and forty years of age, who died of exhaustion in the third month of his illness. The treatment employed, which the author justly considers to have been very successful, consisted principally in the administration of the sesqui-carbonate of ammonia with chlorate of potassa and lemon-juice in the early stages of the disease, with the use of iron and quinine afterwards, and soup and wine as required. The author has found the existence of an epidemic of fever in a ship's crew preceded and accompanied by a prevalence of diarrhœa and purulent affections of the skin.

VII. *A Case of Lumbar Colotomy* (*Amussat's Operation*) *successfully performed for the Relief of a Vesico-intestinal Fistula*, by T. HOLMES, M. A., F. R. C. S., etc.—This case has been already published in the number of this Journal for July, 1866, page 251. We regret to observe, from a recent number of the *Medical Times and Gazette* [January 19, 1867], that the relief afforded by the operation in this case was not permanent, and that the patient has since died with a return of his disease.

VIII. *On a Case of Hydatid Disease of the Liver, and Remarks on the Treatment of Similar Tumours*, by JOHN HARLEY, M. D., F. L. S., etc.—This interesting paper gives full details of a remarkable case of hydatid tumour of the liver, where a complete cure was effected by means of puncture followed by injection of various stimulating substances. Great stress is laid upon the importance of maintaining a free opening for the avoidance of reaccumulation, and the practical points to be attended to in the management of such cases are very well brought out.

The patient whose case forms the text of the paper had acquired the disease in Australia and had suffered from it more than six years at the time of the operation. The after-treatment occupied one hundred and fifty-eight days, and required the constant and unremitting watchfulness of the physician in attendance. Full tables of one hundred cases in which hydatid tumours of the liver have been subjected to operation are appended and add materially to the value of the paper. The author disapproves of the use of caustic potassa with a view to producing adhesions between the abdominal parietes and the sac, but makes no reference to the employment of acupuncturation recently suggested for a similar purpose in France.

IX. *On Disconnection of the Incus and the Stapes; its Effects upon the Function of Hearing, and its Treatment*, by the late JOSEPH TOYNBEE, F. R. S., F. R. C. S., etc.—This interesting paper is the eighth of a series, and is divided into two portions, headed "Anatomical and Physiological Observations" and "Pathological and Surgical Observations" respectively. The following are the author's conclusions under the first head:—

"1. That the function of the chain of bones is twofold, viz., the transmission of sonorous waves to the vestibule, and the regulation of their force.

"2. That when the continuity of this chain is interrupted by the disconnection of the stapes and incus, the functions of the chain may, nevertheless, be performed by the combined actions of the *tensor tympani* ligament and muscle and of the *membrana tympani* itself.

"3. That after the destruction of the *membrana tympani* and the loss of the incus, the stapes can still receive vibrations from the air and conduct them to the labyrinth in sufficient force to allow the patient to hear ordinary conversation with tolerable ease.

"4. That after the *membrana tympani* has been destroyed and the incus removed, the combined action of the stapedius muscle and the ligaments connecting the base of the stapes to the *fenestra ovalis*, may be adequate to perform the adapting function of the ear, so that the patient may hear ordinary conversation with tolerable ease."

Under his second heading the author enumerates the conditions in which the use of an artificial *membrana tympani* is desirable, and dwells particularly upon the fact that many persons are deaf *except when in the act of listening;* the act of listening (which consists in the action of the stapedius muscle drawing out the stapes) bringing the stapes and incus into contact and thus remedying the mechanical cause of the deafness complained of. The use of an artificial drum removes the difficulty by supporting the membrane of the tympanum, and thus re-establishing the deficient connection.

The following are the pathological conditions of the ear for which the artificial *membrana tympani* has been found efficient:—

"Disconnection of the stapes and incus, the *membrana tympani* being entire, but the tensor tympani ligament or the mucous membrane of the tympanum being relaxed.

"2. Partial or complete absence of the long process of the incus, the *membrana tympani* being entire.

"3. Disconnection of the stapes and incus, the *membrana tympani* being perforated, and the *tensor tympani* ligament, or the mucous membrane of the tympanum, being relaxed.

"4. Partial or complete loss of the long process of the incus, the *membrana tympani* being perforated, and the ligaments of the stapes being relaxed."

The form of artificial drum specially recommended by the author, consists of a bubble of vulcanized India-rubber containing air.

X. *A Case of Premature Menstruation*, by THOMAS CLIFFORD ALLBUTT, B. A., M. B., etc.—In this remarkable case five menstrual periods were observed in an infant, the first occurring when she was only eighteen months old. Each period was followed by great exhaustion with the appearances of hectic fever, and the child finally sank after the fifth recurrence of the menstrual flow. No *post-mortem* examination could be obtained.

XI. *Case of Myeloid Transformation of the Lungs*, by Thomas Clifford Allbutt, B. A., M. B., etc.—The patient was a boy, fourteen years old, who had been affected with the disease for a long, though uncertain period. The condition of the lung was not recognized during life, as indeed it would seem almost impossible that it should be, and the autopsy was performed under such disadvantages that it could not be ascertained from what part of the thoracic cavity the disease originated. Dr. Moxon made a microscopic examination of the specimens obtained, and his report of their appearances is appended to the paper.

XII. *On Atrophy or Degeneration of the Muscles of the Upper and Lower Extremities, from Disease of the Spinal Cord*, by George Lewis Cooper, F. R. C. S., etc.—An abstract of this paper has already been published in the number of this Journal for October, 1866, page 532. The report of the examination of the spinal cord is contributed by Mr. Lockhart Clarke, and the paper is illustrated by a plate partially coloured.

XIII. *On a Case of Elephantiasis Arabum, or Elephas, successfully treated by the Application of a Ligature to the Main Artery of the Limb; with Remarks*, by Thomas Bryant. F. R. C. S., etc.—The patient was a young woman, aged 25, in whom the disease had originated during convalescence from an attack of scarlet fever ten years previously. Both thigh and leg (of the left side) were affected, the foot however remaining of the normal size. Deligation of the external iliac artery was practised, the ligature dropping on the fifteenth day, and the cure being completed in about seven months.

Abstracts of eight cases where the same treatment was employed are appended, a fatal result (from pyæmia) having ensued in but one. Four of the eight cases are Dr. Carnochan's, of New York, in one of these both femoral arteries having been tied with an interval of some months between the operations.

The author concludes his paper by considering the pathology of the disease in question which he believes to consist in "an abnormal effusion of tissue-making elements," comparing it to the ordinary "fibro-plastic" tumour which it resembles in its microscopic appearances. Two plates accompany this paper, illustrating the appearance of the affected limb in comparison with the sound one, before and after the operation.

XIV. *An Account of a Case of Oblique Inguinal Hernia on Each Side, in which, the Testis remaining in the Belly, the Hernial Sacs descended into the Scrotum and also ascended upon the Aponeurosis of the External Oblique Muscle*, by J. W. Hulke, F. R. C. S., etc.—The patient was a man, aged twenty-seven, who was operated upon for strangulated hernia, dying the next day, and the autopsy revealing the condition of things described in the heading of the paper. Ten and a half feet of small intestine were strangulated, and there was peritonitis at the time of operation, though strangulation had existed for but three hours. The anatomical peculiarities of the case, which was certainly one of unusual occurrence, are fully described.

XV. *An Account of a Second Case, in which the Corpus Callosum was Defective*, by J. Langdon H. Down, M. D., etc.—The author refers to a previous paper in the 44th volume of the *Medico-Chirurgical Transactions*, in which he described a similar case and compared it with others, the histories of which he had found recorded. [See *Amer. Journ. of Med. Sciences* for April, 1862, p. 473.]

The patient whose case forms the subject of the present communication was a man of forty years, who had been imbecile from birth. The rarity of the malformation found in this case may be estimated from the fact stated by Dr. Down that he has met with it but twice in the examination of 150 brains of idiots.

XVI. *Remarks on Chronic Albuminuria originating during the Convalescence from Scarlet Fever and other Eruptive Diseases*, by Hermann Weber, M. D., F. R. C. P., etc.

XVII. *On the Detection of Lung-Tissue in the Expectoration of Persons affected with Phthisis*, by Samuel Fenwick, M. D., etc.—Abstracts of both these papers have already appeared in this Journal, in the number for January of the present year, pages 253 and 250 respectively.

Looking upon the present volume of the *Medico-Chirurgical Transactions* as a whole, we cannot but think it inferior in interest and value to several of its predecessors; it contains notwithstanding a certain amount of material which cannot be obtained elsewhere, and may therefore well take its place with its forty-eight elder brothers as forming a series unsurpassed in value and importance as well to the student as to the active practitioner. J. A., Jr.

ART. XXX.—*Transactions of the Obstetrical Society of London, for the year* 1866. Vol. VIII. 8vo. p. 403. London, 1867.

THIS volume opens with the history of a case of "Double Headed Monstrosity," by Dr. J. G. SWAYNE.

Mr. W. B. OWEN relates a case of "Mechanical Obstruction to the Growth of a Fœtus." This was also a case of deformity. When the fœtus was expelled it was found that its body, in every respect well formed, terminated abruptly at the lower part of the trunk. The legs, which were those of a fœtus about the fourth month, were bound down in front of the pelvis, by the umbilical cord, so closely that they had become imbedded in the soft part of the walls of the abdomen. This had been effected by several convolutions of the cord, passing alternately before and behind the two limbs, in the form of the figure 8, and in this manner entirely obstructing their growth. At one point near the groin the pressure of the cord had been so great and long continued, as to be gradually effecting the amputation of the extremity. The legs were perfectly formed, and but for the mechanical interference with their growth, would have presented no irregularity.

Two kidneys were exhibited by Dr. MURRAY, weighing, the one, seven ounces and four drachms, and the other, six ounces three drachms and a half. They had been removed from a still-born fœtus otherwise normally formed.

In a paper entitled "Brief Notes on some Uterine Therapeutics," Mr. H. E. EASTLAKE calls attention to the *resin of podophyllum* as an emmenagogue. "Whether," he remarks, "it really possesses any specific action upon the uterus, or simply acts sympathetically by stimulating the lower intestine in the same way that aloes and other cathartics do, I am not prepared to say." Mr. E. also refers to the benefit resulting from the use of the *spiritus pyroxylicus rectificatus* of the last London Pharmacopœia, in cases of obstinate vomiting during pregnancy, as well as of the sympathetic vomiting in phthisis. The dose is five minims, in a drachm of the compound tincture of cardamom, every four hours. Attention is likewise directed to the use of *iodoform* as a sedative in cancer, especially when it attacks the uterus. Mr. E. has given the iodoform in doses of two to three grains made into a pill with crumb of bread, and in one case of far advanced disease, applied it, also, locally to the cervix uteri by means of medicated pessaries. The effect was, in all cases, a marked diminution of pain and discomfort, without any evil results in respect to the general health, such as constipation, nausea, loss of appetite, &c., which so often follow the use of opiates and other sedatives under similar circumstances.

Dr. GREENHALGH is in the habit frequently, of giving iodoform in doses of from three to five grains three times a day, and also as a vaginal suppository in the proportion of one grain to a scruple of cocoanut butter. Dr. G. has prescribed the drug in carcinoma, external and internal; in epithelioma of the uterus; in rheumatic gout, neuralgia, and in numerous cases of chronic enlargements, and of marked sensibility from a variety of causes, in most of which it had been followed by good results.

A case is related by Dr. J. HALL DAVIS, of "Fibrous Tumour of the Uterus" attended by early pregnancy; retroversion of the uterus, and retention of urine;

with death and decay of the fœtus, and, subsequently, death of the patient from pyæmia.

Dr. Davis thinks that this case may serve a useful purpose in directing us in all cases where severe constitutional disorder coexists with putrid discharge from the uterus, not proved to be of cancerous origin and irremediable, to endeavour to remove the cause which keeps up such constitutional disturbances.

Dr. ROUTH considered the case was important in the aspect of what should be done in such cases—that is, when abdominal tumours coexist with pregnancy. The post-mortem examination revealed a large fibroid extra-uterine tumour with small pedicle: precisely the case most favourable for gastrotomy. Should this patient have been operated on before delivery, or should labour have been first prematurely induced? Dr. R. advocated the latter course: First, because when abdominal tumours, whether ovarian or uterine, especially if fibroid, have been operated on before labour, miscarriage, or premature delivery was induced—occasionally death. Second, by first causing premature labour, not only is the diagnosis as to the exact nature and bearings of the tumour made more clear, but the impetus which pregnancy gives to its rapid growth removed.

We pass by the "Annual Address" of the President, Dr. ROBERT BARNES. It is made up almost entirely of short biographical notices of members of the Society who had died during the year 1865.

Dr. MEADOWS related two cases, and exhibited two specimens, of "amputation of the cervix uteri." In both cases the operation was performed for *allongement* of the uterus, with more or less procidentia In both cases the uterus has continued so high up since the operation that there is every reason to believe a cure will be effected.

Dr. BARNES related two cases of "sudden death during labour." In one, that of a primipara, maniacal excitement came on during the dilatation of the cervix. Chloroform was given to the extent of inducing moderate anæsthesia, to facilitate the application of the forceps. Gentle traction, aided by the uterine pains, effected delivery in half an hour. The placenta was cast. The pulse continued good. She spoke deliriously at times, but also rationally afterwards. Death occurred, somewhat suddenly, ten hours after delivery. No post-mortem examination was held. Dr. B. did not think death was owing to the chloroform, but was disposed to attribute it to the nervous shock which was manifested before the chloroform was given. The other case was more clear. The patient was in her seventh labour. Convulsion, stertor, and syncope set in before the expulsion of the child. The child was born alive. The mother died twenty minutes afterwards. A small clot, quite recent, was found in the left thalamus opticus; and another, larger and of a dissecting character, in the left crus cerebri. Abdominal and pectoral organs were healthy. Dr. B. considered that the report of such cases was exceedingly important, as supplying illustrations of the fact that death may occur during labour independently of any fault on the part of the practitioner.

A paper by Mr. BENSON BAKER, was communicated by Dr. G. Hewitt, on "The Influence of Lead Poisoning in producing Abortion and Menorrhagia." The chief object of the paper is an exposition of the evidence in proof of the hereditary transmissibility of lead poison, and of the influence of such inherited lead poison in the production especially of abortion. Mr. B. has not met with any cases where the woman primarily took the lead poison, the father remaining healthy, nor any in which the mother was free from the poison while the father was contaminated, consequently, from his personal observations he cannot say how far the lead poison in the system of the father may, of itself, affect the offspring. He has no doubt that if the mother's system be permeated with lead poison, and she becomes pregnant, she will either abort, or if she goes her full time, the child will be born sickly, and most probably perish at an early period subsequently.

A paper was read by ARTHUR E. SANSOM, M. B., on "The Anæsthetic Properties of the Bichloride of Carbon." The impression of Mr. S. is that the anæsthetic in question has the advantage of being more pleasant, less pungent, and more comfortably inhaled than chloroform. But he does not "consider it advisable to induce deep narcotism by means of this agent," and that its use in surgery will of course be restricted.

The next paper, by Dr. T. S. Beck, is a very full and able one, on "Enlargements of the Uterus following Abortions." An analysis of it will be found in our quarterly summary of the past year.

Mr. Baker Brown exhibited a male child born with amputated upper and lower extremities. It was two months old, well nourished, in excellent health, and without other deformity than the absence of the arms from above the elbows, and of the lower extremities to about the middle of the thighs.

Dr. H. M. Madge exhibited a fibrous tumour, weighing about two pounds, attached to the uterus, taken from a woman who had destroyed herself by taking oxalic acid.

Dr. Barnes communicated the history of a case of "Retention of a Fœtus in the Abdomen for forty-three years," by R. W. Watkins, Esq. This is a somewhat unique case and one of deep interest, not only as an instance of recovery from tubular gestation, with, probably, rupture, but also from the comparatively slight local and constitutional effects produced by the retention of a foreign body in the cavity of the peritoneum for more than forty-three years.

Dr. Barnes presented another mummified fœtus, with cord and placenta, that had been expelled from the uterus after the birth of a full-term child. This is one of the class of cases which are adduced in support of super-fœtation. Dr. B. believes that in the present instance there was a double conception; and that one fœtus was arrested in its development by the greater vitality of the other.

Baker Brown, Esq., relates eleven cases illustrative of the use of the actual cautery for the division of the pedicle or adhesions of the tumour in cases of ovariotomy. All these eleven cases resulted in recovery. In three of them Dr. B. was obliged to use ligatures of silver or of twine in addition to the cautery. In all ordinary cases, nevertheless, the division will be best effected, Dr. B. believes, by the hot iron, provided that, at the same time, a properly constructed clamp be made use of. He considers it advisable, also, that the iron should not be heated too hot; a simple red heat he thinks is best, so as not to hurry the process of separation.

A case is related by Dr. C. H. F. Routh of "Fibro-cystic Disease of Uterus mistaken for Ovarian Disease." Attempted extirpation; failure; death from rupture of a vessel within the cyst. This case presents several points of interest especially as to diagnosis.

Dr. Gervis exhibited a new "intra-uterine glass stem," which he had found to be free from the inconveniences attributable to the employment of those made of metal and ebony.

"A diseased placenta" was presented by J. Marshall, Esq., of Dover, supposed by him to be a specimen of fatty degeneration of the organ. It was examined by Dr. G. Hewitt. The amniotic surface of the placenta was of a dingy yellow colour, most marked towards the edge. The substance of the organ was on this side firm and hard, to a depth of half an inch at the outer margin, but becoming less and less in depth towards the centre, where the cord is attached. This dense yellow layer is abruptly separated from the softer structure of the placenta, and the vessels of the cord are seen to pass through it. Under the microscope this firm yellow layer appeared to have no definite structure. It was firmer in some parts than in others, but its texture was tolerably uniform. There was no evidence of fatty degeneration, excepting just at the circumference. While two or three of the branches given off by the umbilical vessels were of their ordinary size, a certain number had the appearance only of delicate cords. It would seem that the blood had circulated only through a few of the vessels while the others had become obliterated.

"The appearance and condition of the placenta is compatible with the theory that the indurated yellowish layer is the result of effusion of lymph at a period probably two or three months antecedent to delivery. Possibly the primary condition may have been effusion of blood beneath the amniotic covering of the placenta, and the subsequent absorption of the colouring portions. At all events," concludes Dr. H., "the condition does not appear to be one of fatty degeneration in the ordinary sense of the word."

Dr. A. MEADOWS relates the history of a case of "Cyst of the Fallopian Tube." The case terminated fatally; post-mortem examination showed extensive peritoneal inflammation and its results, especially in the uterine region. The uterus and its appendages were all bound up together by thick and firm adhesions. On dissecting them out it was found that both Fallopian tubes were irregularly enlarged, so as to form a kind of cyst. On the right side there were two such enlargements, on the left, one. There was no evidence of any communication between these and the fimbriated opening. On the left side there was not even an opening into the uterus. The cyst was filled with a dark, thick, grumous fluid of a prune-juice colour.

Dr. M. believes that this case furnishes an example of what Bernutz and Goupil have contended for, viz., menstrual retention in the Fallopian tubes. It is very certain that the Fallopian tubes do, as well as the uterus, take part in the menstrual excretion; hence, when any obstruction occurs to the passage of the menstrual blood into the uterine cavity and thence externally, symptoms of menstrual retention result. Whether the peritonitis which proved fatal in the present case, was the result of the escape of some of the retained fluid into the peritoneal cavity, or of reaction upon the peritoneum, Dr. M. considers it impossible to decide. It seems probable to him that with the existence of retention, and the consequent distension of the walls of the tubes, a cold douche that was employed at a time when a free discharge of blood was taking place, was the immediate exciting cause of the peritonitis, which probably would not have taken place had the parts generally been in a healthy condition.

Dr. R. GREENHALGH presented a paper on "Mechanical Dysmenorrhœa," in which he states that he had operated upon nearly 300 cases of this affection with but few and slight casualties. In one there was rather profuse hemorrhage, for which plugging was had recourse to; in about five others pelvic cellulitis ensued, a casualty which is by no means infrequent after the use of sponge tents; in one, peritonitis was set up, and terminated fatally. Strictures of the external os with conical cervix had been extremely rare in Dr. G.'s practice. In the great majority of cases the seat of the stricture was at the internal os, demanding free division. In nearly all the cases in which he has operated, he has been compelled to dilate the strictured parts, in order to permit the introduction of the metrotome. Formerly, Dr. G. was in the habit of dividing the cervix uteri with but little or no precautions. Subsequent experience, however, convinced him that although no evil ensued in the great majority of cases, still, every now and then much mischief resulted. He now makes it a rule first to improve, as far as possible, the patient's general and local conditions before operating, and then to keep her for two or more days in bed, under the surveillance of a good nurse, with an appropriate diet. Dr. G. alludes to the great danger of the introduction of the sponge tent after the division of the cervix uteri. He knows of one fatal case resulting from this practice, and is confident that many more will be added to the list if investigation be pursued.

Dr. Barnes exhibited a uterus, with its appendages affected with colloid disease: also a specimen of an abscess of the placenta, containing about an ounce of pus. In the latter case, no symptoms of pain were present during gestation. There had evidently been inflammation of the decidua. Such cases are very rare; only two or three are on record.

The history of "Cases of Laceration of the Uterus," with remarks, by Dr. THOMAS RADFORD, have already been noticed in the Quarterly Summary of this Journal, for 1866.

Dr. WYNN WILLIAMS exhibited a large abdominal cyst removed from a patient, forty-six years old, unmarried, who had suffered, more or less, for twenty years. When seen by Dr. W., the distension of the abdomen was so great as to endanger suffocation. Seventeen quarts of water were drawn off by tapping. The fluid began rapidly to accumulate, when it was determined to give her a chance for her life by attempting the removal of the cyst. The patient died the subsequent day to the operation, which was only partially successful. A post-mortem examination showed that the tumour had really no pedicle, and although firmly adherent to the diaphragm, duodenum, and the parts in the neighbourhood of the right kidney, it could not be said to have its origin from any of them.

The only plausible explanation of its production was that suggested by Dr. Routh, that it was one of those cases where a Graafian vesicle had escaped into the cavity of the abdomen, and become adherent to the tissues in the neighbourhood. The cyst contained cholesterine and granular matter.

Dr. G. Hewitt exhibited the uterus and ovaries of a female, fifteen years of age, who had died during the menstrual period, of severe fever. The mucous membrane of the body of the uterus was in places a third of an inch thick. It was very soft and velvety to the touch, attached firmly to the uterus, excepting at the internal os, where it was slightly separated from the uterine wall. The free surface of the membrane was quite perfect, the orifices of the uterine glands were distinctly seen. The mucous membrane at its deepest layers was intensely injected with blood, and a bloody fluid exuded from the uterine glandular orifices on the slightest pressure. One of the ovaries contained a recently ruptured Graafian follicle, the opening through which the ovum had escaped had apparently become closed, and the yellow ovisac presented, on section, the characteristic wavy outline. The Graafian follicle measured two-thirds of an inch in diameter. The other ovary exhibited, on section, one or two old corpora lutea.

Dr. J. Braxton Hicks called attention to the employment of anhydrous sulphate of zinc, cast into sticks of various sizes and lengths, for the treatment of those states of the canal of the uterus which require styptics, such as cervical leucorrhœa, and turgid vascular conditions of the mucous membrane, frequently giving rise to menorrhagia. The application of solid agents to the canal, Dr. H. considers much more satisfactory than the use of fluid preparations which soon after their injection flow too readily away, and cannot overcome the resistance of the thick mucous secretion lining the mucous membrane.

Dr. G. Hewitt read a paper on the subject of "Menstruation during Pregnancy." It is well known that, especially in the early months of pregnancy, a bloody discharge per vaginam occasionally takes place, and in a few rare cases with perfect regularity. In some instances Dr. H. believes that a twin conception having occurred, one of the embryos perishes within the first one or two months, causing the discharge of the amniotic fluid belonging to the blighted fœtus, mixed with, or succeeded by blood from the separation of the membranes from the uterus. A subsequent flow, within the succeeding three or four weeks, may be caused by the escape of more or less blood from the decidua, as yet uncovered by the extension of the membranes of the surviving fœtus. Be this true or not, it is most reasonable to suppose, Dr. H. believes, that in the majority of cases of menstruation during pregnancy, the source of the blood is the same as in ordinary menstruation; that is, the surface of the decidua. "During the early months of pregnancy, and prior to the time at which the decidual chamber is abolished by the adhesion or rather apposition of the decidua reflexa to the decidua vera, there is nothing to interfere either with the exudation of blood from the surface in question, or with its escape through the os uteri." Menstruation during pregnancy is due therefore to a non-adhesion of the two decidua, in connection with an unusual tendency to exudation of blood from the surface of the decidua vera. This explanation will account for the asserted occurrence of menstruation during the whole period of gestation. Slight or considerable losses of blood may occur during pregnancy from the presence of disease, or from accidental and partial separation of the ovum from the walls of the uterus. In such cases the discharge always takes place at irregular intervals.

Mr. Robert Ellis read a paper on the production of "Anæsthesia by Mixed Vapours," as a means of increasing the safety of the practice; and described a new method of preparing and administering the mixed vapours, with the view to the production of insensibility, when such is desired in the introduction of this new method.

In a paper by R. F. Battye, Esq., a short examination is entered into of "Certain Uterine Affections, especially those accompanied with Leucorrhœal Discharge, in their relation to Phthisis Pulmonalis," with the histories of nine cases. Mr. B. remarks that the number of cases given are exceedingly small; he believes them, however, to be sufficiently varied to give an explanation of the fact that in some way or other there exists between the uterus, or generative organ, and the lungs, a mutual functional relationship which, if it be disturbed, causes them to act upon each other for good or evil. Hence, in studying the disease of one class of organs, more remote organs must not be passed by as having no relation to each other.

To attempt any statistical estimate of the percentage of cases of consumption preceded with leucorrhœa would be in the present state of our knowledge, according to Mr. B., presumptuous, but from past observations, he believes that the cases of consumption preceded by leucorrhœa for one or more years, before tubercle actually presents itself in the lungs, is not probably under fifty per cent., in females under 18 to 40 years of age. Future experience can alone decide upon the importance to be attached to particular morbid conditions tending to retard or develop so formidable a disease as phthisis pulmonalis.

Dr. Meadows related a case of hypertrophy of the labium, which commenced suddenly after the birth of her second child, in a married female, 27 years of age, who had always enjoyed good health, with the exception that she had been subject to psoriasis from the time her catamenia had appeared in her fourteenth year. The third year after the hypertrophy appeared, the left labium was of the size of the fist, while the entire mons was much thickened, indurated, and brawny-looking. The entire labium was removed with an elliptical portion of the mons. The patient ultimately recovered; only some slight enlargement of the left labium remaining.

Dr. E. J. TILT contributes a paper on the "Extreme Surgical Tendencies of Uterine Pathologists; and on the Division of the Cervix Uteri." This very excellent contribution has been already noticed in the Quarterly Summary of our Journal.

Dr. BRUNTON showed a placenta, containing in its centre a round tumour about the size of a small egg, which he had removed a few days before from a healthy primiparous young woman.

A curious, and so far as our knowledge extends, a unique "Case of Prolapsed Placenta," is related by Dr. C. SMUTS. The peculiarity of the case consists in the fact that a great part of the placenta prolapsed, attended with pain and hemorrhage, and after remaining exposed outside the vulva for more than 48 hours, was retracted spontaneously within the uterus beyond the reach of the exploring finger. Within a few hours after the retraction a healthy child was born, followed immediately by the expulsion of the placenta. There can be no doubt, Dr. S. remarks, that the protruding tumour was really composed of part of the placenta.

Mr. J. T. MITCHELL relates the history of a "Case of Early and Entirely Detached Placenta, during Labor, producing Internal and Concealed Hemorrhage," of which the patient died soon after. The cause of the detachment of the placenta in this case is involved in no little obscurity.

Mr. ROBERT DUNN relates a fatal case of "Concealed Accidental Hemorrhage, occurring at the Eighth Month of Pregnancy." In the discussion to which this paper gave rise, Dr. Brunton maintained that the chief diagnostic symptoms of accidental concealed hemorrhage are: 1st, sudden collapse and fainting, with continuance of this state; 2d, intense continuous stretching pain, and the tense state of the membranes, also continuous. Dr. Hicks thought that with our improved means of practice, we hardly ought to be so helpless in these cases as is generally supposed. With the power we possess of dilating the cervix with the apparatus of Dr. Barnes, we are enabled within an hour or two, to either apply the forceps, or turn the fœtus and deliver; or, should rapid delivery not be judicious, we could, at least, detach the placenta, and thereby remove the local tension from the uterus.

For a notice of the paper of Dr. Routh, which follows, "On a New Mode of Treating Epithelial Cancer of the Cervix Uteri and its Cavity," we refer our readers to the "Quarterly Summary," of a preceding number of this Journal.

Dr. W. S. PLAYFAIR discusses the "Mechanism and Management of Delivery in Cases of Double Monstrosity." The remarks of Dr. P. are replete with interest, and his account of the mechanism of labour in the cases referred to, and the directions for the proper management of these cases during parturition, are no doubt correct. But there is a difficulty of putting the latter into practice at a sufficiently early period, resulting from the fact that it is not, in even the majority of cases, possible to detect, in cases of monstrosity in the fœtus the presence of such monstrosity and its exact nature.

Dr. Graily Hewitt exhibited a "Specimen of Monstrosity," in a female fœtus, in which the cranial vault was entirely wanting. A thin loose membrane extended over the base of the cranium to the vertebræ. The upper portion of the spinal column extended almost to the forehead. The limbs were tolerably well formed. The skin of the abdomen anteriorly was deficient, and the stomach, intestines, spleen, and liver were quite external to the body.

A case is related by Dr. A. Wynn Williams, of "Hemorrhage due to Retained Placenta." The case is an interesting one, and not devoid of instruction. To understand it correctly the account of it given by Dr. W. must be studied in extenso.

The following very novel case is related by Mr. H. E. Eastlake. A lady, aged 26 years, married ten years; after her fourth labour came under the care of Mr. E., stating that since her second confinement in which she was delivered by the forceps, she had not been able to retain the feces, and that these, with wind, also frequently escaped per vaginam. On examination a laceration was detected involving the perineum, a portion of the posterior vaginal wall, and the sphincter ani. An operation was urged and submitted to. The pregnancy following the operation terminated in a miscarriage. When she had arrived at the fourth or fifth month of a sixth pregnancy, it was found that the normal calibre of the vagina had become greatly diminished; the result, of course, of the operation. It being feared that difficulty might result if she went her full time, the induction of labour at the seventh or eighth month was advised, but was not done. At the full period of confinement, Mr. E. was summoned, and found the whole of the right arm was protruding through the anal orifice. The head was in the first position, and low down. Strong uterine action going on, the midwife was directed to press back the arm steadily through the anal orifice as the head descended. The child was quickly born. It was a male, and showed no signs of life for two or three minutes, but was ultimately thoroughly resuscitated. The placenta was extracted without trouble. Mr. E. believes that the presentation was primarily a hand and head one; that as labour progressed the arm descended with the head, and was at length forced through a weak portion of the posterior vaginal wall, and in consequence escaped through the anus. The patient made a very tolerable recovery.

A paper on the "Pathology of Puerperal Eclampsia" was read by Dr. J. B. Hicks, with a contribution of the histories of four cases in illustration of the relationship between albuminuria, uræmia, and puerperal convulsions. The paper is a highly interesting and suggestive one.

The discovery of the frequent occurrence of albumen in the urine of patients suffering from puerperal eclampsia led, at first, to the supposition that it was constantly present, and that the convulsions were owing to the uræmia so commonly believed to be associated with albuminuria. Dr. H. adduces, however, cases to show that up to the time of the occurrence of the first convulsive symptoms, and even for a short time afterwards, the urine is perfectly free from albumen, and that no evidence of anasarca occurs before; but that serious kidney symptoms begin shortly after to arise, as indicated by the condition of the urine. Thus a woman approaches the latter stage of pregnancy, apparently in perfect health, without œdema, and without albuminuria, and is seized suddenly with an epileptiform attack. After the lapse of a certain time, the presence of albumen is detected in the urine, at first in small quantities, but shortly in profusion. Now, blood-globules, waxy and epithelium casts are found in it. The urine becomes next scanty, of high specific gravity, and loaded with very high coloured crystals of lithic acid. The case which is now one of acute desquamative nephritis, may terminate in gradual recovery, the albumen slowly disappearing; or, death may ensue from the intensity of the original attack, or from the retention of urea, &c., in the system, in consequence of the mischief done to the kidneys. If this be a correct exposition of the course of the disease as it usually occurs; if albumen in the urine be an indication of uræmia, and the experiments adduced by Dr. H., showing that twenty-four hours, at least, must elapse after the kidneys have ceased to act, before symptoms of uræmic poisoning can occur, are correct, then it follows that the convulsions cannot be owing to uræmia, at least, as the result of kidney disease. The only modes, therefore, of explaining the occurrence of the acute nephritis in cases of puerperal eclampsia, is in one of these three ways: either, 1st. That the convulsions themselves are the cause of the nephritis; or 2d That the nephritis and convulsions are produced by the same cause, as for instance, some detrimental ingredient circulating in the blood, irritating both the cerebro-spinal system and other organs at the same time; or 3d That the highly congested state of the venous system, as is produced by the spasm of the glottis in eclampsia, is able to produce the kidney complication. Such seems to Dr. H. to be the case as it at present stands, and further than this our present knowledge will scarcely allow us to proceed. To arrive at a positive decision, closer and more extended series of observation must furnish us with the necessary data to clear up satisfactorily the question.

The history of a case of "Double Placenta," with remarks, was communicated by Dr. G. HEWITT. The case is, in several points of view, an interesting one. The uterus contained but one fœtus, which was provided with a single umbilical cord. This was divided at its junction with the membranes, into two branches, each of which ran to a separate and distinct placenta.

A remarkable case of "Placenta Prævia," was related by Mr. G. ROPER. The most interesting features of this case were: the absence of hemorrhage, and the influence of the cervical position of the placenta in causing lingering labour. The same influence by causing deflexion of the fœtal head is a source of the frequency of transverse presentation in connection with placenta prævia. The arrest and impaction of the head at the pelvic brim by means of the placenta is also to be enumerated as another interesting feature of the case. The first three of these conditions have been, as Dr. R. remarks, elucidated by Dr. Barnes in his work on placenta prævia, but Dr. R. is not acquainted with any recorded case in which the placenta was a cause of obstruction at the brim.

Dr. W. NEWMAN relates a case of "Cæsarean Section," with recovery of the mother—child not viable.

A very able paper on "The Anatomical Relations between the Mother and Fœtus," was read by Dr. H. MADGE. Some seven or eight years ago, Dr. M. published a work on the non-existence of utero-placental bloodvessels.

The object of the paper before us is simply to establish the correctness of the conclusions given in the above work by further considerations and facts.

The closing paper of the present volume is on "Excision of the Clitoris as a Cure for Hysteria, Epilepsy, Insanity, etc.," by Dr. THOMAS H. TANNER. In the commencement of the present century the operation of clitoridectomy was introduced for the cure of nymphomania; more recently it has been laid down as a pathological law that many of the functional disorders of women, as well as some severe organic lesions, are due to peripheral excitement of the pudic nerve; consequently, as by the removal of the clitoris it is supposed by many that one of the principal causes by which such peripheral excitement of the pudic nerve is kept up; and by the removal of that organ such excitement may be got rid of, the operation has, therefore, been proposed for the cure or amelioration of a tolerably long list of nervous affections occurring in women. The question is cautiously examined in its more prominent bearings by Dr. T., and by the facts and reasons adduced by him it is shown that the removal of the clitoris is of very doubtful propriety, and that the benefits which have been claimed for it as an important curative means are without any reliable evidence in their support.

The *Transactions* embrace the description of several instruments either obstetrical or for the treatment of certain morbid conditions of the uterine organs. We pass these by. Descriptions of instruments without drawings give, at best, but an imperfect idea of their construction.

D. F. C.

ART. XXXI.—*The Microscope in its Application to Practical Medicine.* By LIONEL S. BEALE, M. B., F. R. S., Physician to King's College Hospital, Professor of Physiology and of General and Morbid Anatomy in King's College, London, &c. &c. Third edition, with numerous original illustrations. 8vo. pp. 320. London: John Churchill & Sons, 1867.

DR. BEALE has become so well known to the working members of the medical profession by his untiring zeal and patient personal labours in minute physiological and pathological anatomy, and by his boldness in attacking received doctrines, that any original papers announced by him, or new editions of his former works containing additional matter, attract the greatest interest. The present volume is no exception to this statement, and we can unhesitatingly say that we consider it one of the most useful books to the practical physician which has appeared during the past ten years (l. c.), taking an equal rank with such works as *Todd and Bowman's Physiological Anatomy* and *Virchow's Cellular Pathology*, though the book in the author's own opinion is still far from what he desires it to be. In its present condition "it contains fifty-eight plates, which have been arranged and printed with the greatest care. The text has been revised throughout, and nearly 100 pages of new matter added." We regret, however, that in order to accomplish this without greatly augmenting the size and price of the book, the chapters on the structures of the healthy organs and tissues have been omitted. For although, as stated in the preface, this part of the subject is treated of in many other works, and much may appear in a subsequent edition of his work on the tissues, yet the directions given with regard to the best methods of preparation of these structures for microscopic examination are not found elsewhere in English works, and would scarcely be in place in Dr. Beale's book on the structure and growth of tissues.

Part I. embraces a consideration of the apparatus necessary for the examination of objects of clinical interest, of the practical operations necessary for their demonstration, and of recording the appearances observed. This includes an enumeration, and, in some instances, brief description of such apparatus, with reference to the author's book *How to Work the Microscope*, for particular details. Of the operations, none are more important than those pertaining to the drawing, engraving, and measuring of objects. Dr. Beale has done much to excite an interest in this department. The absolute necessity of drawings, to enable both the student and practitioner to understand written descriptions of appearances, has long been insisted upon by him, as well as the necessity of *every* observer's becoming sufficiently proficient to trace appearances by means of drawing prisms. So, also, with regard to measuring objects, and indicating the degree of amplification shown in the drawing, by brief and appropriate means. Thus, to indicate that an object has been magnified 400 diameters place in appropriate position near the drawing ×400, or protract the stage micrometer magnified in the same degree in a similar situation. The effect of Dr. Beale's teachings may be estimated by the fact that rarely, at the present day, do we find a drawing of microscopal objects appear in any of the first class journals that has not its degree of amplification indicated in one of the ways described. So that the camera lucida and stage micrometer may be looked upon as absolutely essential articles of accessory apparatus to the microscope.

In the methods of examining tissues are included the processes of hardening and softening tissues, making sections and preserving tissues, and the process of injecting. The latter is so described as to be rendered practicable by the most inexpert student. Dr. Beale's views with regard to the relative value of opaque and transparent injections are well known, and our own limited experience has led us to similar conclusions, especially in the use of the Prussian blue transparent fluid. With the carmine we have been less successful, from the disposition of the latter to infiltrate and stain the tissues with which it may come in contact. We have seen very beautiful transparent carmine injections made and mounted in balsam by Mr. Geo. Roberts, a student of medicine in this city. He, however, pursued the plan recommended by Hyrtl of suspending the carmine in size, instead of the glycerine mixture of Beale. The facility with which transparent injections can be viewed with the highest powers of the microscope, and with which the vessels can be studied in relation to intervening tissues, gives them a palpable superiority. Dr. Beale's new method for preparing all healthy and morbid tissues, tumours, &c., for microscopical examination under the highest powers, first published in the third edition of *How to Work with the Microscope*, August, 1864, but adopted by the author years previously, is given with such minuteness that it may be followed by any experimenter, and observers are invited to make use of it.

The directions given for the microscopical and chemical examination of the fluids and solids of the body are very precise, and cannot fail to be of the greatest utility to the practitioner. A great deal is here found, succinctly stated, for which much time must otherwise be spent by the practical physician in looking up in works on physiological and organic chemistry. Some novel points are introduced in methods for detecting living or lifeless particles in the breath and atmosphere. Dr. Beale "thinks it very likely that if such experiments were conducted with extreme care, some most valuable facts might be discovered with regard to contagious diseases," and has "no doubt that ere long we shall be able to catch and preserve the living particles of *contagium* on their way from the infected to the sound organism." This is expecting a great deal, but Dr. Beale does not make the statement without being aware of the practical difficulties to be met with in attempting to attain such an end, for he has contended against them in his experimental investigations with regard to the cattle plague in England, when he was surprised to find large fragments of the food, starch corpuscles, particles somewhat resembling those of soot suspended in the air of London rooms, three or more different kinds of fungi sporules, bacteria, fragments of epithelium, and a number of bodies he was unable to identify. These all collected upon a clean plate of glass, moistened with pure glycerine, which was held for a few moments in the current of the animal's breath.

Some very interesting pages are introduced in Chapter II. upon the microscopical examination of living things by the highest powers of the microscope. Dr. Beale arranges the movements occurring in living beings in two divisions:—

1. *Primary or vital movements*—affecting matter in the living state only, and occurring in every direction; as seen in the amoeba, white blood corpuscles, mucous and pus corpuscles, chyle and lymph corpuscles, ova, and in germinal or living matter generally. Among these he includes also cyclosis, or the rotation of the contents of cells.

2. *Secondary movements*—the consequence of vital movements, or of other phenomena, affecting matter which is not in a living state, as ciliary movements, muscular movements, molecular movements, which infect all insoluble particles in a minute state of division, be they "*living*" or "*non-living*," when suspended in a fluid not too viscid, and lastly, movements of solid particles suspended in fluid in cells caused by currents in the fluid, as the pigmentary matter in the pigment cells of the frog, due to the motion of the fluid as it passes into or out of the cell through its permeable wall. (p. 62.)

To study the movements in germinal matter, as exhibited in the pus corpuscle, a $\frac{1}{12}$ of an inch object glass is required, and it is often necessary to examine one particular corpuscle half a minute or more; while even with this power the changes are sometimes so slow as to cause the observer who looks at them for the first time to be doubtful of their existence. "Under the $\frac{1}{16}$, $\frac{1}{25}$, $\frac{1}{50}$ the alteration of form can be seen very distinctly, and there are few things more wonderful, or which will furnish more interesting matter for careful thought and for valuable and useful speculation." We fully coincide with him in his conception of the interest and wonder of such movements; yet it is somewhat disappointing to be told that they can barely be seen by a $\frac{1}{12}$, and only satisfactorily by a $\frac{1}{16}$, $\frac{1}{25}$, or $\frac{1}{50}$, the lowest of which powers are, from their costliness, beyond the reach of many of us. We have, however, studied what we supposed to be the movement of the white corpuscle with a $\frac{1}{5}$ object glass of an angle of aperture of but 75°. Some beautiful drawings are executed by Dr. Beale illustrating these movements.

Spectrum microscopic analysis which has recently become so valuable in legal medicine, is also appropriately considered by Dr. Beale, and drawings of suitable apparatus accompany his descriptions.

Part II. includes the microscopical characters of the structural elements, of the deposits from fluids, of living cells in health and disease, and of animal parasites. The simplest structural elements—*granules*, *globules*, *cells*, *fibres*, and *membranes*—are defined as in the author's work on the tissues, and the importance of a uniform terminology insisted upon. Dr. Beale's views with regard to all these elements were given at length in a review of his book *On the Structure and Growth of the Tissues*, in the January number of this Journal, and need not be again referred to in this brief notice. In his chapter on lymph, chyle, blood, &c., some new observations on the blood corpuscle are introduced, in which he defines the red corpuscle of man and mammalia as consisting "of a mass of soft, viscid matter, perhaps of the consistence of treacle, composed of *hæmatocrystallin*. It is at least in certain states soluble in water, but is only dissolved by serum and the fluid part of the blood very slowly. The outer part of this matter is of firmer consistence than the interior, especially in the older corpuscles. When the latter are placed in water, the more soluble matter is dissolved, leaving the harder, external portion. By the action of many chemical reagents, the outer part of the red corpuscle is condensed. These and other appearances have led observers generally to the conclusion that the red corpuscle was a cell containing fluid contents, and so firm has been the conviction that this was so, that the rupture of the 'cell' and the escape of the contents have been spoken of as if they had actually occurred and had been seen. That the red corpuscle is not a cell is proved conclusively by the following facts:—

1. A blood corpuscle may be divided into many smaller portions, every one of which assumes the spherical or spheroidal form, and in many cases become stellate.

2. The mass of germinal matter in the case of the nucleated corpuscle of the frog and other vertebrates, or a portion of it, may pass right through the red viscid material of which the outer part of the corpuscle is composed, without the rupture of any membrane, just as a solid particle might pass through treacle or molten pitch.

3. A red corpuscle from guinea pig's blood assumes the crystalline form very readily without the addition of any reagent. The process may be watched under the microscope, and a single corpuscle seen to become a single crystal, or by the application of a gentle heat a corpuscle may be broken up into several smaller portions, every one of which becomes a tetrahedral crystal.

4. Several blood corpuscles under certain circumstances run together, forming a soft, homogeneous, viscid mass, in which nothing like cell-walls, or the remains of such structures, can be seen, and which undergoes crystallization in every part without exhibiting indications of cell-walls anywhere.

5. When water is added to blood corpuscles, they swell up just as a piece of jelly would swell up, but they do not burst, as generally stated. No doubt soluble matters are dissolved out, but as the water evaporates the corpuscles assume their previous form, although they appear paler than before." (p. 169.)

It has been thought worth while to introduce these reasons of Beale for considering the blood corpuscle to be without a cell-wall, as there are many who oppose him. Among those who agree with Beale, however, is Dr. Dalton, of New York, and Dr. Carpenter is also recently disposed to accept his views. It will be recollected that the reasons generally assigned by those believing in the existence of a cell-wall are—1. The crenated form assumed by the blood corpuscle when placed in a fluid of greater density than its contents, as the result of an exosmosis of those contents, whereby the cavity formed by the wall becomes too large, and the wall folds upon itself. 2. The resumption of the natural shape when the corpuscle thus crenated is placed in a fluid of less density than its contents. 3. The appearance even of a double membrane when the red corpuscle is treated with tannin. 4. A behaviour on the addition of reagents similar to that exhibited by other bodies acknowledged to be cells. 5. Their uniformity of size. 6. The asserted detection of shreds of membrane after the corpuscle has burst. It will be seen that in one or two instances the same reason is alleged for the support of both sides of the question, which, of course results from a different interpretation of appearances. Without pretending to decide the question, we are inclined to coincide with Drs. Beale, Carpenter, and Dalton.

Dr. Beale agrees with most physiologists that the white corpuscle originates in the lymph and chyle corpuscle, and that the red corpuscle originates in the white corpuscle, but believes the red corpuscle to be *lifeless*, whereas the white corpuscle is considered to be a *living corpuscle*, composed of living or germinal matter. He says: "The living germinal matter becomes gradually resolved into the red, lifeless hæmato-crystallin, which accumulates, and probably into other substances which escape. The hæmato-crystallin is probably diffused through the germinal matter, and this latter being perfectly transparent and colourless, cannot be distinguished. Shortly before death, however, a change occurs in these young corpuscles, the germinal matter moves away, leaving the lifeless coloured material behind." (p. 171.)

If there is any point in which Dr. Beale's theory, as ordinarily interpreted, is weak it is with regard to the *lifeless* character of the so called formed material. If by lifeless he intends merely to convey that it has lost all power of converting pabulum into structure, as we interpret him, it is then truly dead; but a structure can scarcely be considered dead so long as it possesses function, and as he admits that the *formed tissue*, forming the great mass of the structure of the adult frame, as in bone, tendon, nerve, muscle, &c., is that part which possesses function, and that through which the functions of the body are carried on, then it is not dead and should not be spoken of as such.

It should not be omitted that Dr. Beale also considers it probable that the masses of germinal matter (nuclei) which project into the interior of capillary vessels may also give origin to the white corpuscles.

The microscopic examination of *sputa*, and especially of the sputa of phthisis, is appropriately considered. The ease with which fragments of elastic tissue of the lung may be detected in the sputa of phthisis, even where physical signs are not marked, makes it a matter of great importance that young practitioners especially should make themselves able to recognize the delicate, wreath-like fragments of this tissue. By the aid of acetic acid, which renders the other structures transparent, these curling fibres, if present, become very distinct—a fact which ought not to be overlooked. Dr. Beale gives, on p. 190, an exhaustive list of references for those who desire to make a special study of the microscopical characters of sputum.

Some new observations are introduced on the pus corpuscle with which many of the readers of this Journal are familiar. Suffice it that he considers the pus corpuscle to be a mass of living germinal matter, which has descended continuously from the normal germinal matter of the body, as the result of an excess of pabulum, and that pus is not formed in connective tissue corpuscles and epithelial cells only, as contended by Virchow, but that it *may be derived from any germinal matter in the body*. He believes, also, that there is no true cell-wall in the case of ordinary pus, which he considers "is proved by the fact that protrusions of the matter of which pus corpuscles consist, may occur upon every part of the surface, and not only so, but some of these protruded portions, after moving a considerable distance from the mass, become disconnected from it, and thus new corpuscles are formed. It is in this way that the very rapid multiplication of pus corpuscles is effected."

With regard to *tubercle*, Dr. Beale considers it extremely difficult to decide with any certainty its mode of origin. He considers it "probable that tubercle results from the multiplication of the masses of germinal matter which have passed through the capillary walls from the blood, or is developed from the masses of germinal matter usually termed nuclei, in connection with the capillary walls."

In the chapter on urine and urinary deposits, little new matter is introduced, though some reliable cuts are added to the plates illustrating the subject.

In the chapter on morbid growths, Dr. Beale does not pretend more than to give the most important microscopic characters of some of those which frequently come under the notice of the practitioner, but refers to appropriate works. He makes no classification, and considers that "we know too little of the anatomy, mode of development, and history of morbid growths to attempt anything like a systematic classification." To Dr. Beale it would seem "much more important that we should endeavour to give good drawings of the structure of the growths, with a short description of their most important characters, than attempt to give them names, still less to hide our ignorance of their real nature by the use of such imposing but ill-defined terms as *fibro-cystic sarcoma*, *cylindroma*, *cholesteatoma*, and many others. which merely embrace one or two characters, and may, with much reason, include a number of structures essentially distinct from the one in question. Rather let us say that a tumour is like brain or marrow, or that it has a fibrous, cartilaginous, vascular, granular, or osseous appearance; or that it contains plates of cholesterine, cysts, &c.; or that it is composed of fibrous tissue, epithelium, cancer cells, mucous tissue, a gum-like material, &c."

Some very interesting and suggestive remarks are introduced by Dr. Beale on the origin of morbid growths, for which we must refer readers to the original work, as any attempt to condense them in what is intended as a mere bibliographical notice would probably tend to confuse rather than enlighten. It might be stated, however, that there appears to be no essential difference between the ideas of the author and those of Virchow as to such origin; the minute masses of germinal matter connected with normal tissue, which Beale believes to be invariably the source or origin of all morbid growths corresponding to the connective tissue corpuscles of the former author. By both authors, at least, some part of normal structure is considered the starting point of such new formations. Indeed we are struck with the similarity of the views above quoted with regard to classification and nomenclature to those of Virchow upon the same subject, as given in the last chapter of Cellular Pathology.

The concluding chapter on animal and vegetable parasites is a useful one to the practitioner. Much new matter is introduced with many very beautiful and accurate illustrations.

The latter include drawings of trichinæ spirales in different stages of growth, different specimens of tæniæ and echinococci, the entozoon-like bodies found by Dr. Beale in immense numbers in the muscles of animals destroyed by the cattle plague, and of the various forms of fungi characteristic of the different vegetable parasitic diseases. The latter, being accompanied by appropriate descriptions, will be of very great assistance to the young practitioner in his diagnosis of these varieties of skin disease.

We must not omit an allusion to the suggestions for taking cases and making post-mortems appended to the volume. These were published by the author in No. IX. of the *Archives of Medicine*, but are quite worth repeating in connection with a practical work like the *Microscope in Clinical Medicine*. They supply a want which has long been felt by the resident physicians of our hospitals, and if followed faithfully cannot but make them good observers.

In conclusion, we may be permitted to allude to a plan pursued by Dr. Beale which may not be without some advantages, but is also liable to some objection. This is the practice of republishing much of the same matter in his different works. Thus we have his method of preparation of all tissues for microscopical examination, under the highest powers, published in *How to Work the Microscope*, *The Microscope in Clinical Medicine*, and Dr. Beale's new edition of *Todd & Bowman's Physiological Anatomy*. So the account of reagents, with their effects upon the different tissues, is printed in the two works, *How to Work the Microscope*, and *The Microscope in Clinical Medicine*. While the simplest structural elements met with in health and disease (granules, globules, cells, fibres, and membranes) are defined in the three works referred to, and also in the author's work *On the Structure and Growth of Tissues*.

The importance of a uniform nomenclature, and of the indication of the same objects by the same names, is so great that probably the latter could not be repeated too often, and Dr. Beale considers his method of the preparation of the tissues so essential for obtaining correct ideas of structure, that he may be justified in repeating it, but the two works on the microscope, at least, should be complemental to each other, and much valuable space would be gained by omitting such reprint. Were the points alluded to published in but one of the two works on the microscope, more than sufficient space would remain for publishing the valuable account of the microscopic appearances of the healthy tissues and organs already referred to as omitted in this edition from a want of space.

We do not find in this edition that repetition of the same figures in different plates complained of by the author of the bibliographical notice of the second edition in Vol. XXXVII. of this Journal. We find but two or three of the cuts duplicated in this edition, nor do we consider any of them unnecessary. The typography and general execution of the book, except the binding, are in the best style of Churchill & Sons. J. T.

ART. XXXII.—*The Progress of Acupressure.*

1. *Acupressure: An Excellent Method of Arresting Surgical Hemorrhage, and of Accelerating the Healing of Wounds.* By WILLIAM PIRRIE, C. M., M. D., A. M., F. R. S. E., &c. &c.; and WILLIAM KEITH, M. R. C. S. E., M. D., &c. &c. Illustrated by engravings on wood. Royal 8vo. pp. 190. London: John Churchill & Sons. 1867.
2. *Notes on the Progress of Acupressure.* By Sir J. Y. SIMPSON, Bart., M. D., D. C. L., &c. 8vo. pp. 24. Edinburgh: Adam and Charles Black.
3. *Medical Times and Gazette*, 1865 and 1866, *passim.*

"*Tetigisti Acu.*" PLAUT. *Rud.* V. 2.

1. THE eminent surgeons of Aberdeen, whose names appear upon the volume placed first in our list, have done, perhaps, more than any others (with the exception of its introducer) to spread the use of acupressure, and to induce other surgeons, in various parts of the world, to give it an unprejudiced trial. They have now offered to the profession the results of their united experience in its employment, and in the volume before us present what may be considered a fair statement of the claims to superiority on the part of the new method over the old. Prof. Pirrie, who has contributed rather more than three-fourths of the volume, goes fully into the history and mechanism of the various methods now in use for controlling hemorrhage by acupressure, and gives details of thirty-two cases of various nature in which he has used the method in question. These cases are afterwards tabulated (on page 134), giving the nature of the operation, the age of the patient, the method in which acupressure was used, and the number of hours during which the pins or needles were permitted to remain. We regret that this table was not completed by adding the nature of the disease for which each operation was performed, the result in each case, and the time it was thought necessary to keep the patient in hospital before the wound was healed with sufficient firmness to allow of his or her discharge. We have taken the trouble to construct a table (for our own edification), supplying these deficiencies, as far as possible, from the detailed histories in the preceding pages of the volume, and must confess that the advantages of acupressure over deligation have appeared less startling when the cases were thus viewed than when Prof. Pirrie's table alone was consulted. Thus, of twelve cases of amputation, eleven were for disease, and only one (primary) for accident. Eight of the twelve were in children not over fifteen years of age, and three of the twelve (25 per cent.) were followed by a fatal result. The average age of the twelve was twenty-two years and five months. Now, looking at the matter from a strictly clinical point of view, considering the nature of the cases for which the operations were performed (amputations for pathological, being universally conceded to be less dangerous than those for traumatic causes), and the great advantage presented by the youth of the majority of the patients, it can scarcely be claimed that these results were *unusually* favourable, or that it would have been presumptuous to hope for as much success had the arteries been tied, instead of twisted or squeezed.

Again, the only case of amputation in which the length of time occupied in the patient's convalescence is definitely stated, is that of a little girl aged seven years, whose arm was amputated in its upper part for an injury received by being run over by a cart. The operation was performed at once, and it is expressly stated that "there were scarcely any symptoms of shock" from the accident (p. 83). Now, although this was considered "a perfect example of immediate union, or union by the first intention" (p. 85), the child was not allowed to leave her bed for two weeks, and was not discharged from the hospital until the thirty-second day. May we not deem it a pertinent question to ask why was the cure so delayed, when there was not a single drop of pus seen in its progress?—and if (as we suppose), it was thought necessary to retain the patient so long that the "immediate union" might acquire firmness and solidity, wherein was the great advantage over the use of the ligature, by which, probably, every surgeon has had, not unfrequently, quite as satisfactory and rapid recoveries?

Dr. Keith's portion of the volume under examination gives twelve cases in which he has used acupressure, with full details and judicious remarks. We observe that his fifth case is stated in the summary (p. 150) to have proved fatal from pyæmia; a statement that must have escaped Prof. Pirrie's attention, or he could not have written as he has done on page 141.

Several of Messrs. Pirrie and Keith's cases were attacked with erysipelas, several with sloughing, one proved fatal from pyæmia, and two suffered from hemorrhage—consecutive in one case, and secondary in the other—besides a third, in which hemorrhage recurred on the premature withdrawal of the pin.

The book is handsomely though carelessly printed, and is well illustrated—rather more plentifully, however, than seems to us desirable, as most of the cuts turn up unexpectedly in two or three different parts of the volume.

2. Sir James Y. Simpson's pamphlet presents the same flowing style, elegant diction, and (may we be excused for saying so) slight inaccuracy of statement that characterized his delightful volume on acupressure, published in 1864. Thus we read on pages 8 and 9 (note) of the pamphlet before us: "Dr. Pirrie has used acupressure in 32 of the major operations of surgery, and in many minor ones. In only one case did he meet with secondary, or rather with intermediary hemorrhage." Now, the fact is, that Dr. Pirrie reports hemorrhage in *three* cases, not in *one* only, numbered respectively Cases 7, 11, and 24 of his series. Again, we read on the last page, that "in the work of Prof. Pirrie and Dr. Keith, above eighty capital operations are reported as treated by them and Dr. Fiddes with acupressure." We have failed to find more than fifty-four cases detailed in the work in question (including ten of Dr. Fiddes', which are merely noted in a table on page 135), though a few others are referred to in passing; nor should we designate a case of hemorrhage from sloughing paronychia of the thumb (Case 20), nor cases of incised wounds (Cases 12 and 21), nor even cases of excision of the breast or testicle, as "capital operations."

3. What shall we say of the great "acupressure controversy," which raged so furiously among our Transatlantic brethren a year ago? Let us be thankful that the medical profession in America has been spared such "public executions," angry replies, and still more angry rejoinders, as filled the pages of the British medical journals for so many months; and let us hope that when the smoke of battle shall have finally cleared away from the acupressure question, we may have an opportunity to obtain an impartial and unprejudiced view of the real merits and advantages of Prof. Simpson's admirable invention. For that it is an admirable invention—that it has real merits and great advantages (in certain cases) no one who has used acupressure can for a moment doubt. The rapidity and ease with which it can be applied, and the fact that the surgeon can use it without any assistant whatever, constitute advantages which cannot be gainsaid; and we should no more hesitate to receive acupressure from an obstetrician than we did to receive ether from a dentist; but the error which Prof. Simpson and his followers have committed, it seems to us, has been in claiming too much for the needle, and throwing too much obloquy on the

ligature. Prof. Pirrie has himself seen this, and has come nearer to what we consider a correct "appreciation" of acupressure than any others who have written on the subject. For, in fact, if the "objectionable and deleterious effects of the ligature" (*Simpson on Acupressure*, p. 150) are so marked as is claimed, why should Prof. Pirrie recommend deligation in preference to acupressure in any cases whatever? (pp. 143 and 144.) Why, because a wound is likely to heal by granulation, deliberately place "some minute morsels of dead flesh into the raw cavity or upon the raw sides" of such wound? (*Simpson, op. cit.*, p. 43.)

"We cannot bid adieu to the ligature," says Prof. Pirrie; and in terminating this notice with the concluding words of his essay, while we must continue to think that the ligature will remain as it has for so many years the method *par excellence* for suppressing hemorrhage, we beg leave to add our entire assent to the sentiment of the eminent Aberdeen Professor, when he says: "While many great operations have such a high rate of mortality in the practice of *all* good surgeons in *all* countries, it seems a duty not 'to rest and be thankful,' but to receive, and gratefully to adopt, acupressure, in the hope that some of the sources of danger may be modified or entirely removed." J. A., Jr.

ART. XXXIII.—*Behandlung der Croupoesen Pneumonie mit Veratrum-Praparaten.* Von Dr. THEODOR KOCHER. 8vo. pp. 96. Würzburg, 1866.
Treatment of Anaplastic Pneumonia, by Preparations of Veratrum. By Dr. THEODORE KOCHER, of Bern.

THERE would appear to be, among the medical practitioners of the present day, a very strong inclination to discard entirely bloodletting in all forms of disease. It is unquestionable that the use of the lancet in inflammations of the lungs has of late years become the exception instead, as it was formerly, the rule. We cannot at present enter upon an examination of the cause and propriety of this radical change in the therapeutics of the important disease in question, and shall be obliged to confine our notice to the subject of Dr. Kocher's treatise, the treatment of pneumonia by preparations of veratrum.

Many of the physicians of this country and of Europe advocate the trusting to the veratrum alone the treatment of pneumonia, especially those forms of the disease in which the exudations produced by the local inflammation is what Rokitansky denominates croupose matter instead of plastic lymph.

In the work before us this plan of treatment is very ably defended, and its superiority strongly urged. The facts adduced by the author in evidence of the efficacy of veratrum as a remedy in pneumonia are mainly drawn from the study of some sixty cases submitted to the action of that agent in the Clinic of Professer Biermer, in the hospital of Berne. A brief sketch is given of these cases, their history, symptoms, and march, in the first chapter of the present treatise.

Dr. Kocher does not advocate the veratrum as a specific in pneumonia, but he believes that he is warranted in urging it upon the profession as an important and prominent remedy in the rational treatment of the disease.

According to the observations of Dr. K., the veratrum has a direct influence upon the febrile stage of pneumonic inflammation; diminishing promptly all the symptoms which are necessarily attendant upon an acute febrile attack. He has found that when administered within the first twenty-four hours of the attack the increase of the fever is prevented and the fever is shortened in duration, and that in mild cases, when given even at a later period it arrests the extension of the local disease; while in all cases it hastens a favourable crisis of the fever, and the prompt solution of the inflammation.

During the acute stage, and under all the circumstances of the disease in ordinary cases, the use of the veratrum will be proper and beneficial. When the local disease is severe and rapidly increases in intensity and extent, in conjunction with the veratrum, bloodletting will be demanded.

In cases attended with severe local disease and a fever of a low type Dr. K. considers the veratrum to be contra-indicated.

There occasionally results from the employment of the remedy a sudden sinking of the powers of life. This may in general be prevented or remedied by the employment of stimulants. According to Dr. K., all the disagreeable results which are observed from the use of veratrum are commonly of only temporary duration.

The veratrum, we are informed, should be so given in cases of pneumonia that its effects may be reached with as much promptness as is consistent with safety. The requisite dose will vary according to the circumstances of each case, as well as with the age and condition of the patient, etc. It should, however, in all cases be sufficiently powerful to arrest the local disease as promptly as possible. The use of the remedy ought to be at once discontinued should it give rise to severe nausea, vomiting, or any symptom of disturbance of sensibility or motility, and also so soon as the pulse and the temperature of the patient's skin become normal.

We admit that the facts recorded by Dr. K. present the veratrum in a very fair light as a remedy in many cases of pneumonia; they fall very short, however, of convincing us of the propriety of trusting to its employment, unaided by an early and judicious use of the lancet, in an attack of pneumonia of much severity. D. F. C.

ART. XXXIV.—*Die Frage ueber die Heilbarkeit der Lungenphthisen; Historisch, Pathologisch und Therapeutisch untersucht.* Von Dr. JOH. BAPT. ULLERSPERGER. 8vo. pp. 275. Wurzburg, 1867.

The Question as to the Curability of Pulmonary Phthisis, Historically, Pathologically, and Therapeutically considered. By Dr. J. B. ULLERSPERGER.

THE work of Dr. Ullersperger is replete with interest, and comprises much that is of a highly instructive character. The various therapeutical means which have been proposed from time to time for the cure of pulmonary consumption are passed under review, and an attempt made to determine their respective value by comparing them with former and received opinions in respect to the etiology and pathology of tuberculosis, especially of the lungs. However much particular therapeutical means and agents may appear to have done good in the amelioration of some of the more prominent and distressing symptoms of pulmonary tuberculization, and in arresting for a time its fatal march, no evidence has been as yet adduced to convince us that there has been discovered a plan of treatment upon which we can rely for lessening the mortality of this formidable disease. Although we may admit, with Dr. U., that our acquaintance with the true, rational treatment of phthisis has advanced considerably within the last twenty or thirty years, still we are not yet enabled to confidently give a favourable prognosis in any case under any course of treatment.

Numerous facts upon record show that all the symptoms of consumption as well physical as physiological, have entirely disappeared, and that in many cases, where this has taken place and death has ensued years subsequently from other diseases, a post-mortem examination has shown beyond doubt the evidence of the existence in the lungs at some former period, of tubercular disease. Upon a careful analysis of these cases of the cure of pulmonary phthisis, the favourable termination of at least most of them is to be referred less to the therapeutical means employed than to the spontaneous concurrence of certain favourable conditions in the cases themselves. As, for example, the localization in the lungs of the tubercular deposit, the early softening of the deposit, and the early and entire discharge of the softened mass through the bronchi and trachea; enabling thus the walls of the cyst, in which it was contained, to coalesce without impairing to any perceptible extent the functions of the lung.

The annals of our profession would seem to prove that in its early stages consumption may be arrested in its progress by a proper hygienic course, with the assistance of such therapeutic means as any intercurrent disease may call for. And we think that it can now be scarcely doubted that in the predisposed the development of pulmonary consumption may, with certainty, be prevented by the removal of the patient to a cool, dry, equable climate, allowing him daily active exercise in the open air, a rich, nourishing diet, and all other means adapted to promote a vigorous circulation, a prompt and healthy nutrition of every portion of the body, and the free and regular action of the emunctories. Every precaution should be taken to preserve the chest, lungs, and air-passages from irritation and inflammation. Mere tuberculization of the lungs is very commonly a very chronic affection, and with due precaution may exist for many years without producing any very serious inconvenience to the patient. But when the tuberculosed lung becomes inflamed, symptoms of the most serious character quickly occur, and the case runs on rapidly to a fatal termination.

The work of Dr. U., with all its merits, can lay but little claim to originality. The facts adduced by the author are chiefly derived from the observations of others. With commendable industry he has collected from every reliable source the materials made use of by him in the elucidation of the question discussed, and he has arranged them with skill so as to exhibit their respective bearings. The entire work is well worth an attentive study on the part of every physician familiar with the language in which it is written. D. F. C.

Art. XXXV.—*Lehrbuch der Ohrenheilkunde mit Einscluss der Anatomie des Ohres.* Von Dr. Von Tröltsch, A. O., Professor der Medizin un der Universitat Wurzburg. Dritte, Ungearbeitete und Stark Vermehrte, Auflage. Wurzburg, 1867. 8vo. pp. 438.

A Manual of Aural Medicine, including the Anatomy of the Ear. By Dr. Von Tröltsch, Aural Surgeon, Professor of Medicine in the University of Wurzburg. Third edition, revised and enlarged.

To the second edition of Dr. Von Tröltsch's very excellent work on diseases of the ear, which appeared in 1862, the American medical public have been introduced by the translation of Dr. Roosa, of New York, a notice of which appeared in a preceding number of this journal. As admirable a manual of the pathology and therapeutics of the diseases to which the different portions of the auditory apparatus are liable, as was confessedly the edition just referred to, up to the period at which it appeared, the third edition, which is now before us, is in every respect superior to it. It has been very thoroughly revised in every chapter. The very great advances which have been made within the last fourteen or fifteen years in our acquaintance with the true seat, the causation, the symptoms, march, and nature of the morbid conditions incidental to the several portions of the organ of hearing, and with the treatment best adapted to conduct them to a favourable termination, have been carefully studied by the author, and, when of value, incorporated in the manual. Many additions have been made to the text, and one entire new chapter, the fifteenth, has been added.

The work of the author "On the Anatomy of the Ear in its Application to the Study of the Diseases of the Organ," or at least the substance of it, has been made use of in the preparation of the present edition of the manual, so as to precede the account of the morbid affections of each portion of the auditory apparatus by a description of the anatomical structure of the latter.

The author has succeeded in the preparation of a treatise on the pathology and therapeutics of the diseases of the ear—presenting a very complete and correct exposition of present views based upon recent observations and investigations, and well adapted for the use of the student and practitioner.

The text is illustrated by eighteen wood-cuts. D. F. C.

ART. XXXVI.—*Catalogue of Obstetrical and other Instruments exhibited at the Conversazione of the Obstetrical Society of London, held, by permission, at the Royal College of Physicians, March 28th,* 1866. With Numerous Illustrations. 8vo. pp. 229. London, 1867.

THE exhibition of instruments, the catalogue of which is before us, has been pronounced by a competent judge, "one of the most astonishing historical displays of the mechanical appliances of the obstetrical branch of the Art ever collected together in one room."

The aim and purpose of this exhibition was, by bringing together the instruments that have been used in different ages and in different countries for the purpose of overcoming those obstetric difficulties which have been met with in all ages and which now occur in all countries, to enable all who had access to it to read for themselves a most important chapter in the history of midwifery; to enter, as it were, into the thoughts of other men, their predecessors and contemporaries, by studying the visible expressions of minds labouring in the cause of our common science. Enabling them, also, to do something towards identifying and preserving the original forms of instruments as they were designed and used by their inventors.

The interest evinced in the exhibition and the desire generally expressed to possess a permanent record of the event, have induced the Council of the Society to publish the present catalogue, in the hope that future service may thus be done to the cause of obstetric medicine. The permanent utility of such a work will be greatly facilitated if, from time to time, inventors or modifiers of instruments, and instrument makers, of all countries, will, as the Editor of the volume before us suggests, send for insertion in future editions, "descriptions, and if possible, illustrations, of any novelty they may have introduced." D. F. C.

ART. XXXVII.—*On the Growth of the Recruit and Young Soldier, with a View to a Judicious Selection of "Growing Lads" for the Army, and a Regulated System of Training for Recruits.* By WILLIAM AITKIN, M.D., Edinburgh, Professor of Pathology in the Army Medical School, etc. etc. etc. 16mo. pp. 72. London, 1862.

THE basis of this Essay is a "Lecture Introductory to the Course of Instruction at the Army Medical School." It is designed to show that inasmuch as growth is not completed until about the twenty-fifth year of life, great care is necessary in training young soldiers in order to secure them to the service in an efficient condition during the period of enlistment. More than sixteen per cent. of the invalids of the English army are recruits of less than two years; and almost all the invalids are men of less than three years' service. This extent of loss is ascribed mainly to receiving recruits at too early an age, and to their training not being in accordance with physiological laws.

This little volume will be appreciated by medical officers of the army and navy. W. S. W. R.

ART. XXXVIII.—*The Science and Practice of Medicine.* By WILLIAM AITKEN, M.D., Edinburgh, Professor of Pathology in the Army Medical School, etc. etc. etc. From the Fourth London Edition, with additions by MEREDITH CLYMER, M.D., etc. etc. 2 vols. 8vo. pp. 955, 1114. Philadelphia: Lindsay & Blakiston, 1867.

THE two bulky volumes before us comprise a very complete and accurate digest of the present state of our knowledge in respect to the science and the practice of medicine, well arranged with reference to the wants as well of the student as of the young practitioner.

The initial chapters, composing Part the First, indicate the all-important element of "general pathology," with a brief sketch of the principles on which the systems of nosology have been founded since the days of Cullen.

The remainder of the work is divided into three parts The first discusses the subject of systematic medicine—nosology—or the classification of diseases. Dr. A. suggests the adoption of the classification of the Registrar-General of England. This, which was originally proposed by Dr. William Farr, has, we are informed, been carefully discussed and revised at the recent meeting of the Statistical Congress held at Vienna, while a nomenclature substantially the same has been proposed for adoption in all the States of Europe. It is stated, on the authority of Dr. Farr, that a classification nearly the same as the English one has been adopted in Bavaria, and is quietly making its way among practical men in Germany.

An accurate nomenclature and classification of diseases are highly desirable objects, but in the present state of our knowledge can scarcely be attained, so far at least as to render any system of nosological terminology fixed and determined. The true etiology and pathology of many important diseases are far from being settled, in points even in regard to which a positive conclusion would seem to be the most easily arrived at. With our present imperfect knowledge of special pathology the nosological arrangement pursued by Dr. A. in the treatise before us is as unexceptionable as any with which we are acquainted.

In the next division of the treatise, comprising the nature of diseases, special pathology and therapeutics, an account is given of the nature of each disease considered in reference to the class in which it stands. Each morbid process is defined not by a logical definition, but merely by enumerating prominently its leading characters, so that the student may at once distinguish the general features of the malady. Having thus established the position of each disease in reference to its nosological and pathological notations, the principles which govern its treatment are stated, and, in some instances, definite details are given.

This department of the treatise is very full, and presents a fair exposition of the opinions of the leading authorities of the past and the present, in respect to the nature, causes, phenomena, course, and treatment of the diseases of the human organism. The practical importance of the thermometry of disease is set forth, and diagrams illustrative of the typical ranges of temperature, particularly in febrile diseases, are given.

The concluding part of the treatise comprises the subject of Medical Geography, or the Geographical Distribution of Health and Disease. This is unquestionably a most important department of the science of medicine; without an acquaintanceship with which the true etiology of a long list of endemic and epidemic diseases cannot be satisfactorily made out. "It was," Dr. A. remarks, "emphatically written by Cabanis and Malte Brun, that climate and natural history lost much of their value from the fact that the physical conditions of the surface of the earth had not then been described in relation to these studies —a deficiency now in a great measure supplied by the labours of Humboldt, Berghaus, and Johnston. So, also, it may be stated that the nature of diseases and their distribution on the globe require that they should be studied in relation to the physical condition of the earth's surface and to the variations of their types in the different regions of the earth. The geographical distribution of health and disease in relation to physical geography, is a branch of the science of medicine rapidly and justly growing into one of importance, and in one department—that of sanitary science—is beginning to yield most important fruits."

This portion of the work is of interest, and replete with instruction. Several of the questions involved in the subject have, of late, been investigated with care, and facts developed calculated to materially modify the views heretofore held in regard to the influence of climate in relation to some of the most prominent diseases.

The additions that have been made by the American editor are copious and important, and the occasional notes inserted by him appropriate and useful, and increase materially the completeness of the work. D. F. C.

QUARTERLY SUMMARY

OF THE

IMPROVEMENTS AND DISCOVERIES

IN THE

MEDICAL SCIENCES

ANATOMY AND PHYSIOLOGY.

1. *Anatomy of the Capsule of Tenon and its Relations to the Muscles, Sclerotica, Conjunctiva, Caruncle, etc.*—In our preceding number we gave an account of a modification of the operation for strabismus, devised by Dr. Liebereich, from his minute investigations regarding the capsule of Tenon and its relations. The result of these investigations we shall now lay before our readers.

"The capsule of Tenon," he observes, "which incloses the whole eyeball, with the exception of the cornea, consists of two very different portions. The posterior half, with its smooth, firm inner surface, forms a cup in which the eyeball moves freely, as the head of a joint in the socket. This cup is pierced by the four recti muscles, and forms, at the point of perforation, a sharply defined ring, which enters into so close a connection with the muscles, as to render any displacement between the two impossible. This close adhesion between the muscles and the posterior half of the capsule is, moreover, increased by sheath-like processes, which run backward from the outer surface of the capsule towards the orbit, and which are, for a certain distance, firmly connected with the muscles. But, towards the eyeball, no sheath-like processes extend from the posterior capsule; the latter terminates abruptly in the form of a ring, which incloses the spot where the muscles penetrate, and whence, for a very short distance, the muscles are quite free from any adhesion. But before the tendon is inserted into the sclerotic, it penetrates between the sclerotic and the anterior half of the capsule, and becomes united with the latter.

"This anterior half of the capsule, which may be considered as standing towards the posterior portion in the relation of a semicircular lid to a semicircular cup, is much thinner than it, and is difficult to dissect, more especially on the dead body; for, like the conjunctiva, it rapidly diminishes in thickness and firmness after death.

"If we trace the anterior half of the capsule from the anterior pole of the eye towards the periphery, we commence with a circular opening which corresponds to the size of the cornea, and through which the latter projects. The margin of this opening is in close apposition to the sclerotic. Within a zone, which is bounded on one side by the opening or the margin of the cornea, and on the other by the line uniting the insertion of the four recti muscles, the conjunctiva, the capsule of Tenon, and the sclerotic, are firmly and immovably connected together. At the periphery of the zone, this condition becomes, however, changed. The connection between the capsule and the sclerotic is interrupted by the passage of the muscles. The lax cellular tissue, which here connects the sclerotic with the capsule and the inner surface of the muscle, may perhaps have given rise to such complex and fanciful descriptions as those of Guérin. (*Gazette Médicale*, 1842, No. 6.) The idea that the muscles, after they have pierced the capsule, are accompanied as far as their insertion by sheath-like processes derived from it, has, owing to these descriptions, maintained itself in ophthalmology even up to this time, and has served as a basis for explanations of the effect of the tenotomy, the difference between the old and modern mode of operating, etc. This idea is, however, erroneous; for these sheath-like processes do not exist at all. But, as has been already mentioned, the anterior half of the capsule of Tenon certainly adheres to the external surface of the muscle and is intimately connected with it. On the other hand, the conjunctiva is here also tolerably firmly connected with the capsule, as far as a somewhat irregularly circular line, which may be recognized by the fact that it lies at the bottom of a furrow when the eye is moved in an eccentric direction. The formation of this furrow prevents the sinking and tilting forwards of the conjunctiva, which would otherwise occur near the caruncle, as, for instance, when the eye looks far inwards.

"From this marginal line, the connection between the capsule of Tenon and the conjunctiva becomes quite lax. One portion of the connective tissue, which composes the anterior half of the capsule, is reflected, and passes over into the submucous tissue of the eyelids; another portion attaches itself to the edge of the posterior half of the capsule, in order thus to close the latter. These two halves do not really pass perfectly over into one another, inasmuch as the edge of the posterior half of the capsule is partly continued into the band-like adhesions between it and the edge of the orbit."

2. *New Lingual Muscle.*—BOCHDALEK, Jr., describes a new small muscle of the tongue, extending longitudinally in the middle line between the two genio-hyo-glossi.—*Reinhert und Du Bois Raymond's Archiv*, 1866, from *Journal Anatomy and Physiology*, No. II.

3. *Professor Parkes's Recent Experiments "On the Elimination of Nitrogen by the Kidneys and Intestines during Rest and Exercise on a Diet without Nitrogen.*"—These experiments were conducted at the Netley Hospital, and were originally undertaken "to test the results arrived at by Prof. Fick and Wislicenus with respect to the elimination of nitrogen during exercise on a non-nitrogenous diet, as recorded in the *Philosophical Magazine* for June, 1866 (supplement)." Their conclusions were in brief as follows:—

The question at issue was, whether muscular power is the result of the oxidation of actual muscular substance, or of the elements of the food after absorption, but before conversion into organized tissue; and the object of the experiment was to determine the ratio existing between the waste of the tissues produced by a given amount of mechanical work, and the calculated amount of force to be obtained from the oxidation of so much matter. For it is evident, that should these two quantities prove to be not related to one another, the waste of the tissues must not be taken as the equivalent of the amount of work done.

To determine this point, the Professors, having abstained for a given period from meat, bread, cheese, milk, and, in short, from all food containing nitrogenous principles, carefully estimated the amount of nitrogen excreted during their ascent of a mountain, which happened to present unusual facilities for the purpose; and they found that, after making ample allowance for errors of observation, "scarcely one-fifth of the actual energy required for the work performed could have been obtained from the amount of muscle consumed," the remaining four-fifths having been supplied by the elements of the non-nitrogenous diet taken during the period.

These conclusions, although supported in the main by the results obtained by other observers, have been objected to on the ground of the very short period over which the observations extended, and on account of the intestinal excreta not having been considered. It was with the view of testing the value of these objections that Dr. Parkes undertook the present series of investigations.

The experiments were made upon two perfectly healthy soldiers, of steady and regular habits; one of them, S., was a young, strong, active adult; the other, T., the senior by several years, was a small spare man, but well proportioned and active. Every care seems to have been taken to insure the most accurate results. The whole period of eighteen days, over which the observations extended, was divided into five periods, as follows:—

First, a period of six days, during which the men ate a regulated diet, consisting of—

	S.		T.
Cooked meat	7.625	oz. avd.	7.625
Bread	16.66	"	16.26
Vegetables ($\frac{3}{4}$ potatoes, $\frac{1}{4}$ cabbage)	13.87	"	13.
Butter	1.	"	1.
Tea (milk 3 oz., sugar 1$\frac{1}{2}$ oz.)	20.	"	20.
Coffee do.	20.	"	20.
Beer	15.	"	15.
Water	5.8	"	2.33
Salt	5.	"	.33

and performed their ordinary work. During this period all the variations in their weight, and in the amount and character of their egesta were carefully noted, in order to form a standard of comparison.

Secondly, a period of two days of abstinence from meat, bread, milk, and all nitrogenous food, but with the most complete rest from muscular activity.

Thirdly, a period of four days, during which they returned to their former diet and occupation, in order that they might regain their normal standard.

Fourthly, a period of two days of abstinence from nitrogenous food, but during which they took a very considerable amount of exercise.

Fifthly, a period of four days of their regulated diet and occupation, in order that the effect of the last period might be fully noted.

During the first period it was found that nutrition proceeded with the most perfect regularity, and the excreta (both urinary and intestinal) proved to be perfectly normal. The amount of food was almost the same in each case, as may be seen from the table, with the exception that the bigger man took nearly twice as much water as the other; the smaller man, therefore, took more solid food in proportion to his body-weight than the bigger man did. The proportion existing between the amount of nitrogen excreted and the weight of the body was identical in the two cases, showing, as Dr. Parkes says, "that a real connection must exist between body-weight and urinary excretion." As might have been expected, the smaller man, T., passed more nitrogen in his intestinal excreta than the other did, since he ate the same amount of food and lost less in his urine.

Second Period.—The men were now placed upon a diet consisting of

Arrowroot (cakes and jelly);
Butter (containing no casein);
Sugar; and
Tea without milk.

The quantity was left to choice and appetite. Both took more water than formerly. They were confined to their room, and remained sitting still or lying in bed the whole time. Both lost weight—S. rather more than 2$\frac{1}{2}$ lbs., and T. about 1$\frac{3}{4}$ lb.

The results of the urinary analysis, when summed up, amount to this—that, on the mean of the two days, the urea excreted during the first twenty-four hours was only about one-half of what it had been before, whilst during the last twelve hours it was in each case only one-third of the normal quantity. The total amount of nitrogen excreted varied in much the same proportion. On comparing the relation borne by the excreted nitrogen to the body-weight, it was found that the tissues of the older and smaller man furnished a slightly greater amount than those of the younger man; and this statement holds good both as regards the nitrogen contained in the urea and the other excreta.

Third Period.—The men at the close of this period had regained what they had lost during the previous two days in body-weight, and had, in other respects, returned to their normal standard.

With regard to the excreta, it was found that a certain proportion of the nitrogen of the food was retained in the body to make up for the previous deficiency, and to enable the tissues to recover that reserve fund of nutriment which had been so largely drawn upon. In the case of S. the amount of nitrogen retained represented one-fourth, and in the case of T. nearly one-third, of the whole quantity taken.

Fourth Period.—The men were again reduced for two days to the same non-nitrogenous diet as before during the second period. They ate more this time; their hunger was satisfied, but they complained of the monotony of the diet. They now took active exercise, walking on level ground at intervals during the day, after which they went to bed. On the first day they walked 23.76 miles, which, when calculated as work done, may be represented on Dr. Haughton's plan as follows:—

S. lifted 453.6 tons one foot
T. " 346.74 tons "

On the second day they walked 32.78 miles: *i. e.*,

S. lifted 625.8 tons one foot
T. " 475. " "

"The first day's walking was done pretty well by both men. On the second day both did the first twenty miles well, but felt very much fatigued during the last thirteen miles. During the last four miles each man felt a pain in the small of his back. Both, however, could have marched on the following day if necessary." S. stated that though he had previously marched long distances with a heavy kit, he had never before felt so exhausted. Both men felt hungry; the food, however, satisfied their craving sensations. There was no perceptible action of the skin. The weather was fine and warm.

During these two days S. lost nearly 4½ lbs. in weight, whilst T. lost rather more than 1¾ lbs.

The changes in the excretion of urea were as follows: During the first twenty-four hours a decrease of 15.5 grs. was noted in each case; in the next twelve hours a further decrease of 7.7 grs. took place; whilst, during the last twelve hours, chiefly during rest at night, there was an increase of 30.86 grs. in S., and of 15.5 grs. in T.

The total excretion of urea during these two days of exercise, as compared with a similar period of rest, was an increase of about 7.7 grs. in S., and a decrease of about 11.5 grs. in T.

The total excretion of nitrogen stands thus: S. excreted more throughout the entire period, the excess over that excreted during the same period of rest being about 23 grs.; whilst T. for the first thirty-six hours excreted less than before, but made up for it during the last twelve hours, the excess being ultimately a little over 3 grs.

With regard to the other constituents of the urine, it was found that no increase took place in the amount of phosphoric acid excreted during the period of exercise, as compared with that of rest, and only a very slight increase in the sulphuric acid; whilst it appeared that, on a diet free from salt, much more chloride of sodium passed with the urine during a state of rest than of exercise.

On balancing the totals of the ingesta and egesta during this period, it was found that in both men a considerable increase took place in the egesta of the skin, lungs, and intestines.

Fifth Period.—The men now returned to their regulated diet and exercise. At first both were fatigued after the exertion of the previous day, and rested a good deal; and, as might have been expected, they were more hungry than they had been after the past period, and ate more largely. They almost entirely regained their lost weight in two days.

On estimating the excess of nitrogen excreted during this period, and taking into account at the same time the increased amount of nitrogen taken in the food, it appears that there is no ground for supposing that in the case of S. this excess was derived from the disintegration of muscle which had taken place during the last period. It is, however, probable that the very large excess of urea on the first day of this period, which occurred in the case of T., was really owing to an augmented elimination due to the work done. No such excess was observed in the case of S., who had had, however, a larger elimination than T. during the previous twelve hours.

A marked increase in the excretion of non-ureal nitrogen over the ureal nitrogen was noticed as a direct result of the exercise taken during the previous period. Dr. Parkes considers it probable that this nitrogen existed in the form of creatinine, and believes that the cause of the discrepancy between the results of Professors Fick and Wislicenus and his own on this point is to be found chiefly in the very short period of time over which their observations extended.

The chloride of sodium and the phosphoric acid speedily returned to their respective normal standards.

The following important conclusions may be drawn from these experiments. and those of Professors Fick and Wislicenus, with which they agree on the most important points:—

Firstly. That on a non-nitrogenous diet of fat, starch. and sugar, exercise produces a slight but unimportant increase in the amount of nitrogen excreted both by the kidneys and the intestines.

Secondly. That during the period of actual work the amount of urea is diminished, proving that changes take place which cause either a retention of the nitrogen or an elimination by another channel. It is evident. then, that the quantity of the urea excreted cannot be taken as an index of the amount of waste which the tissues have suffered.

Thirdly. That amount of force expended during exertion is not merely the result of the oxidation of the muscular, nervous, and other nitrogenous tissues of the body, which can, in fact, only represent about one-fifth of the entire quantity, but that a most important share in its production is taken by the non-nitrogenous (fatty and starchy) elements of the food, previous to their transformation into tissue.

Fourthly. That a well-fed body possesses a sufficient store of nitrogen to allow of muscular exertion being continued for some time without requiring any immediate supply. but that food will shortly be required to replace the tissues which have been destroyed, and that this food must contain some of the nitrogenous principles, either animal or vegetable—viz., albumen, fibrin, casein, gluten, &c. This last fact was very distinctly proved during the third and fifth periods of Dr. Parkes's experiment, in which not only was the exhaustion consequent upon the starvation of the nitrogenous tissues severely felt. but a very notable quantity of nitrogen was taken and retained in the body to replace the former loss.

These results, besides their purely scientific value, may teach certain useful practical lessons. Thus, in training for those exercises which require a great and sudden expenditure of force, it is a mistake to supply a too exclusively nitrogenous or meat diet, since four-fifths of the total amount of force has to be obtained from the oxidation of the non-nitrogenous elements of the food—fat. starch, sugar; whilst, on the other hand, the want of a sufficient supply of the nitrogenous elements—albumen, fibrin. and casein. etc.—leads to an inadequate renewal of the wasted muscular and nervous tissues. and the consequent formation of an imperfectly organized structure, which will be less able to bear any of the severer trials to which it may be subjected, and will ultimately lead to early degeneration and death.—*Med. Times and Gaz.*, April 13, 1867.

---

4. *Cutaneous Absorption.*—M. Hoffman related at a recent meeting of the Academy of Sciences some experiments which he had performed on himself in illustration of the question of cutaneous absorption:—

"1. During 44 days I took 16 baths, each consisting of 300 litres of water and 250 grammes of digitalis leaves. After the third bath only, I began to feel the peculiar uneasiness proper to the action of the medicine. my pulse at the same time becoming slower by four or five beats, this condition persisting for several hours. By the eighth bath the *malaise* had increased, and my pulse had descended from its ordinary number of 68 to 61, while after the sixteenth bath it had descended to 48. It is evident, then, that the active principles of digitalis had been absorbed, but only in a slow and progressive manner. 2. Every third day during six weeks I took a bath to which 50 grammes of iodide of potassium had been added. After the fifth bath I recognized the presence of the iodide in the urine, this condition persisting for twelve days after all treatment had ceased, excretion being, in this case, as slow as the absorption. 3. A bath was taken every third day during a month, to which 5 kilogrammes of marine salt had been added, and the chlorides of the urine rose progressively from 2.15 grs. to 3.47 grs. per litre. The general conclusions arrived at from these and other experiments are: (1) Chemical and other agents, dissolved in water, penetrate very slowly, but still manifestly, into the economy by the channel of the external integuments; and it is only when the blood and other liquids have become saturated with them that they are excreted by the economy. (2) All medical agents are not absorbed in the same degree. (3) The contradictory results hitherto obtained are solely due to the fact that the experiments upon which they have been founded have not been pursued for a sufficiently prolonged period."—*Med. Times and Gazette*, April 20, 1867.

5. *Innervation of the Heart.*—A valuable series of researches has been conducted by MM. E. and M. Cyon, of St. Petersburg, with a view to clear up our knowledge of the above subject. The experiments were conducted late last year in M. Du Bois Reymond's laboratory at Berlin, and the results are published in the *Comptes Rendus* for March 25th. Some of the authors' conclusions are of interest. Amongst others are the following: 1. Electric irritation of the third branch of the inferior cervical ganglion produces in rabbits an acceleration of the beats of the heart and a diminution of their force. 2. The first two branches of the same ganglion are the sensitive nerves of the heart. 3. Irritation of the fourth branch of this ganglion, which passes above the subclavian artery, produces a slight increase of the mean pressure of the blood, without altering the number of pulsations. 4. In dogs it is the second branch of the inferior cervical ganglion whose irritation produces the same changes as the irritation of the third in rabbits. MM. Cyon propose to call these nerves the *accelerator nerves of the heart.* They formulate the following conclusions as to their action: 1st. They are not ordinary nerves terminating in the muscles of the heart. 2d. They are not nerves acting on the vessels of the heart, because the complete occlusion of these does not change the number of pulsations. 3d. They are nerves terminating in the ganglia of the heart. 4th. They are antagonists of the pneumogastric. Irritation of the latter diminishes the pulsations of the heart while increasing their force, while these accelerating nerves increase the number of pulsations while decreasing their force.—*Lancet*, April 13, 1867.

6. *On the Mode and Duration of the Contraction of the Heart in Health and Disease.*—Dr. BURDON-SANDERSON, in a lecture recently delivered before the Royal College of Physicians, pointed out the relation between the form of the arterial pulse as revealed by the sphygmograph and the movements of the heart in health and disease.

In every arterial pulsation four events may be distinguished.

I. *The sudden or primary expansion of the artery.*—It was shown that the primary expansion does not express an increase in the quantity of blood contained in the artery, but is due to a sudden jerking forwards of the particles of liquid, and is, therefore, of the nature of a commotion or shock in which each particle communicates its movements to its neighbour.

II. *The more gradual distension of the artery by impletion.*—The moment of greatest impletion occurs at a variable interval never exceeding a fifth of a second after the primary expansion. The time at which it occurs, and the degree in which it is marked, depend on the quantity of blood transmitted by the contracting heart to the artery.

III. *The sudden collapse of the arterial wall.*—This is a movement of the same nature and produced in the same way as the primary expansion—that is to say, by a sudden impulse of the particles of liquid contained in the arterial system in a direction towards the heart, the effect of which depends, not on its extent, but its velocity.

IV. The fourth event constitutes *the diastolic expansion or second beat,* the distinctness of which in certain morbid states gives to the pulse the character known as dicrotism. The explanation given by the lecturer of this phenomenon may be shortly stated as follows: The injection of blood into an artery during the systole of the heart produces two effects therein, both of which are limited to the period of contraction—viz., (*a*) distension of the walls of the arteries, and (*b*) increase of the pressure of the blood against its internal surface. Of these two effects the former is directly proportionate to the *elastic yieldingness* of the artery, the latter inversely proportionate to this property—that is, the more elastic the artery the more is its area increased during the ventricular systole, and the less the augmentation of blood-pressure. According as the one or the other of these effects is in excess the pulse assumes different forms. If *a* predominates, the collapse of the artery at the close of the systole is complete, and is followed by no appreciable reaction. If *b*, the pulse is dicrotous. If the two are balanced, the pulse is normal. This implies that in the normal state of the circulation the force of the heart is only partly expended (as regards the arteries) in carrying on the circulation during the period of systole, the remainder of the force being thrown into reserve to be used in maintaining the flow of blood after the heart itself has ceased to act.

In accordance with this principle diseased pulses may be classified on either side of the normal as follows:—

1. Pulse of which the characters indicate that the arterial blood-tension produced during systole is less than natural, and consequently that the resistance is diminished and the duration of the systole shortened. These effects may be due either to diminution of the quantity of blood discharged by the heart at each stroke (mitral disease, spanæmia), or to an increased susceptibility of the heart to stimuli, whereby the ventricle contracts *too soon*, that is before it has received a sufficient supply of blood from the veins. This state of the heart characterizes what may be properly designated as the nervous pulse, or the pulse of emotion. Here, as before, the quantity discharged is unnaturally small.

2. Pulses of which the characters indicate that the blood-pressure produced in the arteries during the contraction of the heart is excessive; and that in consequence of increased arterial resistance the ventricular systole is prolonged.

Under this head three distinct forms of pulse are comprised—viz:—

1st. The hyperdynamic pulse. This form, which arises from increased resistance dependent on structural changes in the arteries or their capillary terminations, indicates that during the contraction of the heart the arterial system is *over-distended*. In such a pulse the curve which indicates the systolic distension is boldly projected, while the diastolic reaction is comparatively feeble.

2d. The senile pulse, or pulse of inelastic arteries, which differs from the preceding mainly in the complete absence of diastolic reaction.

3d. Adynamic pulse of continued fever. Here the systole is prolonged, not because the resistance is too great, but because the heart is too weak for its work. The arteries are comparatively empty, and, consequently, their elastic yieldingness is in excess. Hence the diastolic reaction is unnaturally great, and the pulse becomes sensibly double, the second beat being often quite as distinct as the first.

In conclusion, the lecturer remarked that the form of pulse to which he attributed the most practical significance was that to which he had ventured to assign the term "hyperdynamic;" for the structural changes in the arteries and arterial capillaries, of which it afforded unquestionably the earliest indication, were of the gravest importance, not only with respect to prognosis, but in their bearing on the estimation of the expectation of life.

The lecture was illustrated by sphygmographic tracings on glass, which were exhibited by means of the oxycalcium light.—*Lancet*, April 13, 1867.

MATERIA MEDICA AND GENERAL THERAPEUTICS.

7. *Protoxide of Nitrogen as an Anæsthetic.*—M. HERMANN states that on two occasions, when he inhaled this gas in a pure state, he was completely asphyxiated. The effect nevertheless was not unpleasant, because the intoxicating effect of the gas overpowered the sensation of dyspnœa, although it is as undoubtedly present. This condition of asphyxia, in which the face is pale and the lips blue, differs very much from that produced by inhaling the same gas mixed with oxygen, in the proportion of 4 to 1. The experimentalist is intoxicated, but in a less degree, and the face retains its natural colour. M. Hermann remarks that surgeons, not now contented with ordinary anæsthetics, are trying this kind of inhalation; he thinks that, inhaled by itself, the protoxide of nitrogen is dangerous, as it is likely to produce a mortal asphyxia; and if administered mixed with oxygen, it is a very weak anæsthetic, of very short duration.—*Brit. Med. Journ.*, April 27, 1867.

8. *Chloroform and Ether in Mixture.*—A mixture of one part of chloroform and two of ether has been by some considered a perfectly safe anæsthetic mixture, it being thought that the stimulating properties of the ether would counteract the depressing effects of chloroform. Mr. ROBERT ELLIS, however, states (*Med. Times and Gaz.*, March 9, 1867) that too much reliance has been placed upon the formula of its constitution, and too little on its evaporation. He gives the following as the conclusions to which he has been led after a long series of experiments:—

"1. That the ingredients of fluid anæsthetic mixtures evaporate in a great degree, independently of each other, and in extremely differing quantities.

"2. That though alcohol exerts *in vacuo*, a powerful influence in restraining and equalizing their vaporization, this influence is in a great measure annulled in evaporation into free air, as in an inhaler.

"3. That the only method of obtaining a true anæsthetic mixture is by consideration of the respective volatility of its ingredients, and so adjusting their proportions as to provide that all should evaporate simultaneously.

"4. But as this can only be done by a very great reduction of the quantities employed, both of alcohol and chloroform, then the object of the mixture is entirely frustrated, and it is reduced in its properties to one similar to ether only —the most volatile of the ingredients always taking precedence of the rest.

"5. That if impure alcohol and ether are used, these defects of unequal volatilization become still more exaggerated, and the result vitiated by the water left behind after evaporation.

"The behaviour of the mixture 'C' which proved fatal in the case at Bristol was most carefully examined by me. I found that it was most unreliable, parting with its ether rapidly and with its chloroform slowly."

9. *Action of Digitalis.*—M. LEGROUX, of Paris, as the result of his investigations, has arrived at the following conclusions: (1) That in all doses digitalis (whose active principle is digitaline) exercises a special influence upon the circulation. (2) If in the poisonous dose digitalis acts directly on the heart, it seems that in the therapeutic dose it first produces contraction of the capillaries, and only secondarily affects the heart in re-establishing the equilibrium of the circulation. (3) According to this theory, digitalis is a sedative to the circulation, in the sense that it calms the disturbances of the latter, doing so not by an excitant or tonic action. (4) The influence of digitalis on temperature, secretion, nutrition, uterine contraction, &c., can only be explained by its excitant action on the ultimate branches of the sympathetic system. (5) This theory explains the favourable results obtained by the use of digitalis in fevers, cerebral affections, hemorrhages, dysmenorrhœa, congestions, dropsies, &c.—*Gaz. Méd. de Paris*, April 27, 1867.

10. *Chlorinated Mixture.*—Dr. W. D. DOBIE gives (*Edinburgh Med. Journ.*, March, 1867) the following formula for the preparation of this mixture, which he extols in the treatment of cholera.

"Take a clear dry wine or brandy bottle, place it for a few minutes upon a hot brick, or upon a stove, until it becomes thoroughly warm, then take eight grains of chlorate of potash in coarse powder, and add to it one fluidrachm, by measure, of chemically pure hydrochloric acid; agitate the chlorate in the acid until all effervescence ceases, and the chlorate is completely dissolved. Then add an ounce of water, shaking the bottle briskly. Continue thus to add sixteen ounces of water, ounce by ounce, shaking the bottle between each addition. If two fluidrachms of chloric ether be now added, the mixture is complete.

"To this mixture I should be much inclined to add a moderate dose of the liquor morphiæ hydrochloratis, following out a suggestion of Dr. Alderson, of which I shall say a few words presently.

"The chlorine mixture, as thus prepared, is about one-third saturated with chlorine; it can be readily taken by patients direct from the bottle, but it was generally administered with an equal bulk of water. Three drachms of the mixture are about equal in strength to a drachm of the liquor chlori of the British Pharmacopœia.

"The dose of the chlorinated mixture was half an ounce every hour, or every two hours, to an adult; if the first dose was vomited, another was given after a shorter interval."

---

11. *Comparative Immunity of Rabbits to the Poisonous Action of Atropia.*—Dr. W. Ogle relates (*Med. Times and Gaz.*, May 4, 1867) some interesting experiments instituted by him in regard to this matter from which he draws the following conclusions:—

"1. That a rabbit of middle age can live for, at any rate, six days exclusively on belladonna without inconvenience.

"2. That a rabbit can tolerate enormous doses of atropia administered either by the stomach or by subcutaneous injection, and that this tolerance is not due to the non-absorption of the poison.

"3. That this tolerance increases with the age of the rabbit.

"4. That dilatation of the pupils is, however, produced just as readily, if not more so, in an old rabbit as it is in a young one."

MEDICAL PATHOLOGY, SPECIAL THERAPEUTICS, AND PRACTICAL MEDICINE.

12. *Researches on Animal Temperature.*—M. Peter has laid before the French Academy the results of his researches on animal temperature. (A.) With respect to the modifications of the general temperature in their relations to modifications of certain functions or changes in volume of certain organs. 1. There is no constant relation between the variations of temperature and those of the circulation. Thus the increase of frequency of the pulse in disease is not necessarily attended with increase of temperature (taken in the axilla); and when this is raised, while there is increased frequency of pulse, there is no constant relation between the increase of pulse and elevation of temperature. 2. There is no constant relation between variations of temperature and those of respiration. 3. There is no constant relation between variations of temperature and changes in the volume of the liver. 4. *But there is a constant relation between the variations of the volume of the spleen and of the temperature.* Thus, whenever during illness the temperature of the body is increased, there is augmentation in the size of the spleen, and the relation of these changes is always constant. For one or more degrees of elevation of temperature, for example, the spleen generally increases one or more centimetres in its vertical diameter. The corollary to be drawn is that the spleen is an organ of hæmatosis, and that it actively concurs in the production of animal heat.

(B.) With respect to the modification of local temperature and those of sensibility. There is a constant relation between the variations of these, when the alterations of sensibility are derived from a material lesion of the nervous centres. 1. The increase of temperature of a region is, within certain limits, inversely proportionate to the degree of sensibility. When the sensibility is morbidly diminished the temperature rises. Thus, when a limb is anæsthized, its temperature is higher than is that of the corresponding limb; while, when there is hyperæsthesia of the limb, its temperature is lower. 2. The temperature may vary from half a degree even to 2° C.; but it frequently rises or falls only to the extent of half a degree, and for its perception a delicate thermometer is required. 3. It is probably from want of having observed the conditions of sensibility in limbs paralyzed from affections of the nervous centres that contradictory accounts of their temperature have been reported. When the sensibility remains intact, there is no change of temperature; when it is diminished, the temperature rises; and when it is increased, the temperature falls below that of the sound limb. Sometimes an increase of heat of a part having its sensibility paralyzed is subjectively perceived by the patient and complained of. 4. These observations prove that the sensibility to heat is distinct from general or tactile sensibility. 5. This modification of temperature is sometimes accompanied by a corresponding disturbance of function in the anæsthized parts. Thus, owing to the excitement of the sudoriparous glands, the sweat may cover the surface. 6. This increase or diminution of the temperature of a region exhibiting diminished or increased sensibility leads to the supposition of a modification in the innervation of the capillary vessels. There may be *asthenia* of the vaso-motor nerves, and consequently dilatation of the capillary vessels, whence a more considerable afflux of blood and correlative increase of temperature in anæsthesia. Or there may be *hypersthenia* of the vaso-motor nerves, with contraction of the capillaries and a diminished afflux of blood, and a diminished temperature in hyperæsthesia.—*Med. Times and Gaz.*, April 6, 1867.

---

13. *Alterations in the Muscles in Fevers, and particularly in Smallpox.*—M. G. Hayem inquires if the lesions of muscles described by Zenker as occurring in typhoid fever are degenerations peculiar and proper to that fever, as the above observer thinks, or rather if they do not represent in the muscles alterations analogous to those, commonly met with in the liver, the spleen, the kidneys, &c., of subjects who have died, not of typhoid fever only, but of other general febrile maladies. His researches have been principally, but not solely, conducted on the bodies of patients who have died of smallpox. He has found the same alterations of the muscles in fatal cases of variola, typhoid fever, scarlatina, measles, erysipelas, tubercular meningitis, generalized acute tuberculosis, and puerperal fever. On the other hand, in a great number of diseases, as phlegmasiæ, tuberculous and cancerous cachexiæ, Bright's disease, &c., the examination of the muscles only gave negative results. In persons dying of cholera the author has always found perfect conservation of the muscular fibres, and this also although the disease has not terminated fatally until after a long typhoid stage; but when cholera has supervened on typhoid fever, variola, or measles, the alterations of muscular tissue which are found in these diseases may be observed. Of the alterations spoken of, the author recognizes three degrees. 1. In the first stage the muscles generally are somewhat swollen and hard, their colour brownish or deep red, their friability a little increased. These conditions are due to general hyperæmia. At irregular points, generally in the form of elongated bands, decoloration and fragility of muscular fasciculi are observed. These characters acquire their maximum of intensity and extent in the next stage. Under the microscope, capillary congestion is observed, and swelling of the muscular fibre, which appears wavy and irregular; striation remains. Soon, grayish granules appear, scattered here and there irregularly, but always between the febrillæ of the primitive fibres. These for the most part dissolve in acetic acid; but, as their number augments, the muscular fibres acquire a granular aspect, and a certain number of granulations resist the action of acetic acid; the muscular nuclei become also more numerous by division. At the points where the muscular fasciculi are paler and particularly fragile, the author has observed that form of alteration called "waxy" by Zenker.—2. In this stage the colour may be variable, depending upon sanguineous exu-

dation, or upon change in the muscle itself. The normal tint of the muscle becomes paler, but not equally so in all the fasciculi: some become reddish gray, others yellowish or whitish; at the same time, their smooth aspect and special brilliancy are modified. Their consistence is altered; the muscular mass is harder, but its fragility is increased, and the torn surface is markedly granular. Microscopical examination shows an exaggeration of the appearances observed in the former stage. The appearance of fatty granules and beads, and the breaking up of the altered fibres, indicate the commencement of disorganization; meanwhile the multiplication of nuclei continues both in the interior of and outside the altered fibres.—3. The third degree is that of disintegration or softening of particular portions or centres. The fascicular aspect is excessively modified or entirely lost; in fact, the consistence may be so altered that at certain points the muscular tissue is diffluent. The muscular fibres tear as if boiled, and in some cases the cut surfaces exhibit a kind of puriform detritus tinged with blood more or less altered. Microscopic examination shows, in these cases, advanced disintegration of the muscular fibres, which are always more or less broken up under the form of waxy, granulo-waxy, or simply granular *débris*. These muscular *débris* exhibit abundant nuclei. Fatty granules and free globules, finely amorphous granular matter, and elements of altered blood are also found.—*Brit. and For. Med.-Chir. Rev.*, April, 1867, from *Gaz. Méd. de Paris*, Nov. 3 and 10, 1866.

14. *Nightmare in Children.*—Dr. Sydney Ringer, in a paper on this subject (*Med. Times and Gazette*, May 4, 1867), says that the subjects of this affection are very generally pale, often ill-nourished, and out of health, and that the immediate cause of this screaming appears to be some disturbance of the stomach and intestines. "This disturbance is very generally dependent on food ill-suited to young children; for this irregularity of the bowels, and the screaming which accompanies it, are especially frequent in those children who have been brought up by hand, and who, consequently, suffer on the one hand from diarrhœa, on the other from constipation.

"Children who suffer from the affection now under consideration are sometimes infested by thread worms, and also show signs of the altered condition of the mucous membrane of the stomach and intestines by itching, heat, and dryness of the inner part of the nose, with itching at the anus. This screaming is increased by anything that interferes with the general health of the child. Thus, it is observed to be worse when the teeth are making their way through the gums, although the irritation and pain which arise from teething appear to be incapable of themselves of exciting this screaming. It is also made worse by slight attacks of catarrh of the lungs, or eruptions on the body. By treatment this screaming can usually at once be arrested. Both general and local treatment are in most cases required, the former to improve the general health, the latter to remove the conditions immediately exciting the screaming.

"The diet should be attended to, and any irregularity in the hours at which food is given to the child, or any unsuitability in the nature of the food, must be remedied. Attention to these points will very generally arrest any diarrhœa which may be present, but constipation with hard shotty motions will generally prove more obstinate, for such motions are almost invariably passed by young children under six months old when brought up by hand, and this although they may be correctly fed and take nothing but good cow's milk sufficiently diluted with water. We have seen that these hard, round, lumpy motions are partly composed of coagulated undigested milk. This coagulation in mass can sometimes be stayed by the addition to the milk of alkalies, such as lime-water or bicarbonate of soda. The latter is preferable for this purpose, as lime-water confines the bowels, and thus bicarbonate of soda should be preferred.

"If the bowels are confined, an active purgative will, in the great majority of cases, suffice to stay the screaming, and will insure to the child calm and refreshing sleep. A powder of rhubarb and soda repeated every night, or every other night, till three powders have been given, is useful. If the child be pale, and the constipation recurs and is obstinate, the following prescription will be found very advantageous—namely: Steel wine, to which is added a few drops of tincture of rhubarb, in quantities adapted to the age of the child and to the obstinacy of the constipation. Usually six drops of tincture of rhubarb in a teaspoonful of steel wine given three times a day will open freely and comfortably the bowels of a child from six to nine months old.

"In order to effect a permanent cure it is often necessary to give medicines to improve the general health of the child, as these children are frequently pale and badly nourished.

"Thus, in children suffering from the affection we have just described, to effect a permanent cure, if the general health be bad, treatment must be directed to the restoration of the body to sound health. In these cases iron, cod-liver oil, with cold sponging prove most useful. Of the various preparations of iron, the tincture of the sesquichloride, in my experience, is decidedly the best. It has appeared to me that bromide of potassium is able to stay this screaming, but as its administration has been accompanied by the use of purgatives, or a regulated diet, it is difficult to determine how far the bromide was useful. It is, however, I feel sure, worthy of a trial in obstinate cases. Cold baths must be given with care; for while they may, if properly administered, do much good, if administered without certain precautions they will do great harm to children. If too great a shock be given to the child, depression of the system will be produced, and this may last even several days after the bath is administered, when the child may be languid and depressed, and may suffer from much chilliness with loss of appetite. Thus the amount of shock produced by the bath must be regulated to the age and strength of the child. In cold sponging of the body the shock caused is proportioned to the coldness of the water and the length of time the bath is continued; while the younger the child, or the weaker its health, the less able is it to bear up against the effect of the shock to which it is exposed. Hence with young children, and especially with those whose system is depressed, the bath should be continued only for a short time, and if the weather be cold, the water must be slightly warmed. When the child is weak, the bath should be continued at first for a few seconds only, and its duration be gradually increased as the child becomes accustomed to its use.

"If the following simple plan be adopted, the child, even if very weak, can take the cold bath with advantage, and all chance of depression is removed. The child should be placed before a good fire with its feet in warm water, while the cold water is freely poured over every part of the body except the head and face. The healthy reaction, with the agreeable sensations which follow the use of the bath, may be much increased by placing the child for a short time in the warm bed from which it had just previously been removed. The bath should be given immediately the child leaves its bed, and the breakfast should be taken soon after the sponging is completed."

---

15. *Chronic Gastric Ulcer.*—Prof. SKODA, in a clinical lecture, remarks: "The chronic gastric ulcer, which, on account of its characteristic form and peculiar course, is designated as *Ulcus rotundum* or *perforans*, was not known to the older physicians; at least, they had no thorough knowledge of it, but confounded it generally with other morbid processes. The chief seat of it is at the lesser curvature, and specially in the pyloric portion of the stomach, chiefly in the posterior wall, more rarely in the larger curvature, and at the cardia. In very rare cases it occurs externally to the stomach, *e. g.*, in the duodenum or lowest part of the œsophagus. The characteristic features of the ulcer are, its circular form and its tendency to spread destructively in depth, and to extend to all the strata of the gastric parietes. The process of destruction always commences in the mucous membrane, and is confined to it in a large number of cases. We find accordingly, not unfrequently, in bodies the traces of a previous chronic ulcer, and the healing takes place, as in all other ulcerations, by means of new formation of connective tissue at the base of the ulcer, by which its edges are drawn towards each other and finally unite. In proportion to the amount of loss of substance will be the greatness of the constriction and shortening or deformity of the stomach, and the consequences may be, both a narrowing of the pyloric half, and also a considerable interference with the movements of the organ. But if the ulcer progresses, it then frequently leads to perforation, and

by the escape of the contents of the stomach gives rise to general and usually fatal peritonitis. In respect of extent and size of the ulcers. numerous gradations occur, and the form of the stomach is still more irregular when several ulcers become confluent. The causes of chronic gastric ulcer are not sufficiently known, probably several factors concur in their production. We may assume as probable, that a partial disturbance of nutrition, due to disease of the bloodvessels, occasions a circumscribed gangrenous destruction of the mucous membrane. The hypothesis, that an altered condition of the gastric juice gives origin to the ulcer, appears to be unfounded; nevertheless, it cannot be denied that the movements of the stomach and the action of the gastric juice hinder the cicatrization and healing. Without doubt, similar ulcers occur on other mucous membranes, but, on the one hand, they are not followed by the same severe consequences to the organism as in the ulcer of the stomach; and, on the other hand, they heal much more easily. Under unfavourable circumstances, as has been mentioned, the ulcer ends in perforation of the stomach and fatal peritonitis; but this occurrence will not rarely be prevented by the circumstance that the base of the ulcer has adhered to the neighbouring parts. Such adhesions are found corresponding to the seat of the ulcer, more frequently between the stomach and pancreas or duodenum; and also with the left lobes of the liver, the anterior walls of the abdomen and the omentum, the spleen, the diaphragm, the colon, etc. If the loss of substance be small, and the adhesions to the neighbouring organs firm, life may be prolonged for a considerable time. But if the loss of substance be great, the function of the stomach will, in spite of the cicatrization, be much disordered, and the nutrition of the organism may in consequence suffer considerably. Besides, even with firm adhesions subsequent perforation may take place from softening of the false membrane.

"The symptoms which accompany the ulcer of the stomach during life are very various. Sometimes for a long interval the symptoms are very insignificant or may be entirely absent; but for the most part, disorders of the functions of the stomach manifest themselves. Generally we observe a very painful sensation in the epigastrium of weight or drawing together; by pressure on the region of the stomach, a fixed, painful spot is detected. But these phenomena are also observable in chronic gastric catarrh, and the diseases are often undistinguishable. The appetite is usually more or less disturbed, occasionally unchanged, now and then increased. Yet the patients complain of slow digestion after meals, of pains, pyrosis, eructation, etc. As the disorder increases, retching and vomiting appear. The pain is generally fixed, but not always confined to the same spot. All the symptoms, it is evident, are not pathognomonic, and the physician is therefore, at an early period of the disease, not in a position to make a positive diagnosis. The hæmatemesis is of greater importance, and it is also one of the most dangerous symptoms, from its decided tendency to relapse. Vomiting of blood occurs with very varied intensity. The vomited matters are either only slightly tinged with blood, or are coloured chocolate brown, or like coffee grounds, the dark colour arising from the action of the gastric juice upon the blood effused into and detained for a long time in the stomach. Should a larger bloodvessel be eroded, the bleeding may be so abundant that death may immediately ensue, and, at all events, the highest degree of anæmia and exhaustion results. A feeling of weight and fulness of the epigastrium often precedes vomiting of blood. The hæmatemesis may take place at any period of the disease. The consequences of profuse hæmatemesis are the same which follow any other hemorrhages: syncope, pallor, coldness of the extremities, feeble pulse, etc. Sometimes the hemorrhage takes place without the vomiting, if a patient becomes pale after a sudden feeling of weight and heat in the epigastrium; and, on examination, the region of the stomach yields a hollow (?) percussion sound; if the pulse becomes feeble, and syncope comes on, from these symptoms we may conclude that a hemorrhage has taken place. Such an internal bleeding may occasion death without vomiting. The bleeding generally occurs during digestion; bodily exertion, mental emotions may induce it, but especially any excitement of the circulation. Emetics also, for which the patient sometimes craves, may likewise occasion it.

"In chronic gastric ulcers several stages may be distinguished. In the first the formation of the ulcer takes place, and requires considerable time for its completion. In this period the symptoms are the same with those of chronic catarrh of the stomach, with which, indeed, the formation of the ulcer is frequently accompanied. The pains present nothing characteristic; they may be continuous and fixed or paroxysmal, and may be mistaken for a nervous gastralgia. The occurrence of pains in the spine opposite the epigastrium is also not characteristic, being found in other stomach affections. Hence, in the earliest stage, ulcer of the stomach is very difficult to diagnose. Palpation reveals at most a fixed spot where pain is increased by pressure, and only in the case of persistent adhesions can we sometimes discover a certain induration. In the following stage vomiting of blood comes on, from which we are better able to decide on the nature of the disease, although this symptom also does not belong exclusively to ulcer of the stomach, but may appear in the course of carcinoma of the organ. Even during this stage, in spite of repeated hemorrhage, the lesion may heal; still hæmatemesis must ever be regarded as a very grave symptom, because the bleeding itself may prove dangerous, and besides the bleeding always indicates a deeper ulceration in progress. Usually all the blood is not vomited, but a part of it passes off in an altered form with the stools, and sometimes the whole of the effused blood is so discharged when no vomiting occurs. In the third stage, perforation of the mucous membrane of the stomach at length ensues. When in consequence the contents of the stomach escape into the cavity of the peritoneum, a fatal peritonitis usually follows. This can only be averted in the case of slowly formed perforation by adhesions to the neighbouring part, and sometimes these adhesions give way at a later period. If these adhesions are extensive, and give rise to a hardness perceptible to the touch, they may be confounded with carcinoma. Occasionally perforation takes place suddenly, unpreceded by any other considerable symptoms of disease, as, for instance, when the progress of the ulcer is quite latent. Extensive adhesions may occasion long-continued disorders of the stomach and induce ill health; but a small adhesion may remain after cure without harm.

"The prognosis of a chronic ulceration is always doubtful, although many cases of cure are known; and although a cure can take place at any stage, still it must always be considered a dangerous disease. Death results either from hemorrhage or peritonitis, or when the course is very chronic from exhaustion. It is supposed that nearly a third of the known cases prove fatal.

"In regard to treatment, the most important rule is, that the patient subject himself to a strict dietetic regimen, and observe the strictest quietude, in order to favour the cicatrization of the ulcer. Besides these, we must endeavour to combat particular distressing symptoms. Milk diet is recommended as the most suitable, such as new cow's or asses' milk; others recommend buttermilk. Generally light fluid nourishment agrees best. For gastralgic symptoms, morphia and similar preparations are employed; for the frequently persistent constipation, clysters; for obstinate vomiting, ice, or small quantities of soda-water; for vomiting of blood, ice, alum, tannin, etc., or ferrum muriat., from ten to twenty drops a dose. The chief difficulty of treatment consists in this, that the chief indications, absolute rest, and abstinence from everything injurious, cannot be fulfilled. We are compelled, therefore, to confine our efforts to reducing the action of the stomach to the minimum, and administering the most easily digested food; a course of treatment which must be persevered in for a long period. For perforation, of course, little can be done, and treatment of symptoms is alone available."—*Edinburgh Med. Journ.*, March, 1867, from *Prag. Viert. Jahrschrift für die Pract. Heilk.* Bd. iv. 1866.

---

16. *Formation of Tubercle.*—In a paper, on this subject, by Dr RICHARD DAWSON, read before the Royal Medical and Chirurgical Society (April 9th, 1867), the author drew attention to the great diversity of opinions as to the real nature of tubercle, quoting Virchow, Lecture XX., illustrative of the general ambiguity of definition. In that lecture tubercle is said to be a degenerative cell proliferation, thereby meaning that new corpuscles arise out of the previous organic morphological elements by a continued succession of divisions—a definition at best but vague even if accurate. The author produced specimens of

tubercle disease in thin sections and photographs from the same, as supports of his arguments, putting in as few drawings as possible, since sun pictures were more reliable than microscopic drawings. He defined a cell to mean an individual having an outer case within which would be found other cell or cells with surrounding material; and he called a tubercle an abnormal collection of animal matter. The ultimate divisions of air-passages he called air-sacs. The author next proceeded to describe certain sections from the healthy lung, showing that organ to be composed of an elastic transparent tissue, covered with oval, transparent, nucleated cells, which by some were called the epithelium lining the air-sacs. He drew attention to the general characteristics of these cells—viz., their transparency, small oval form, and limited number of nuclei. He then passed to diseased structures, showing sections from miliary tubercle of the lung; and observing these same cells, they were seen in places to be no longer transparent, oval, small, and few nucleated, but to have become dark, enlarged, warty, and irregular in form, with many nuclei. This most remarkable change he further illustrated by specimens from the same bodies, as well as some pictures of them. Some of these showed the meningeal arteries and vessels pulled from the cerebral hemispheres; and it was seen most clearly in these that, at intervals along the course of the capillary vessels, bulbous enlargements occurred, and that these swellings were in the outer coat of the artery, for the calibre of the vessel was undiminished. The nature of this bulb-formation he showed to be disease arising in the cells composing the outer coat; and this disease he called "nuclear hypertrophy," from its nature; for it was seen that the long undulating fibre-cells composing the outer coat lost their length, while their nuclei became enlarged and greatly hypertrophied. Many cells taking on this change, the bulb was formed, gradually enlarging, and capable of eventually obliterating the vessels, though not doing so of necessity. The change occurring in the diseased lung-cells was of a very similar nature: their nuclei hypertrophied, and many cells taking on this change at once, a mass was formed of enlarged cells pressing on each other, and eventually shutting up the air-sac altogether, giving rise to a tubercle. There was, therefore, no foreign deposit, but an abnormal action set up in the nuclei of normal cells. Dr. Dawson concluded his paper by defining the mechanism of tubercle-formation to be that, from unseen causes, certain cells in a tissue took upon themselves diseased action of the nature of nuclear hypertrophy; that this action continuing in many cells at once, as in the lung-sac, the passage became choked, its function destroyed, and hence arose a tubercle. Tubercular disease was one not only manifesting itself in deposits visible to the naked eye, but which affected the microscopic elements of cell-tissues partially as regards the cells composing the organ, generally as relating to the human body diseased.—*Med. Times and Gazette*, April 20th, 1867.

—

17. *Inoculation of Tubercle.*—Mr. John Simon, President of the Pathological Society, related to the Society (March 19, 1865) certain experiments he had made, illustrated by specimens, in regard to this subject. He stated that his attention had been called to the subject by certain experiments of M. Villemin which he had wished to authenticate. Various litters of rabbits, amounting in all to fifteen, had been procured; part (ten) had been inoculated, part (five) not. Five of the former when killed presented a fair amount of disease, but in the lung only, certainly not as much as described by Villemin. One doe inoculated had after the inoculation invariably brought forth dead litters. From the rabbits affected three others were inoculated; one soon died, but the others, when killed some months after, presented unmistakable appearances of tubercle in the lungs. One had, besides, some tubercle in the mesentery and spleen; the other had most in the mesentery. Various animals, he stated, were differently susceptible, and Vogel's experiments had thus ended in a negative result. Villemin's experiments had been repeated by two French observers, who stated that gray tubercle was best adapted for inoculation, but Mr. Simon had made use of yellow tubercle with the results laid before the Society.

Dr. Andrew Clark stated that he had been attempting to inoculate tubercle for the last five years; and he would ask the President what *he* meant by inoculation. Was the operation performed as in vaccination—by a mere scratch—or was a large wound made? (Here Mr. Simon explained that a small puncture was made, and the tuberculous matter introduced into it by a curette.) As to the substance employed, gray tubercle was a known product; yellow might be many things. In his experiments the substance produced in the rabbit was not the same as the tubercle found in man, the former having a cellular structure, the latter being entirely corpuscular. Another point was that the rabbits so affected might be kept for any length of time, as the so-called tubercle did not appear to undergo any of the secondary changes which ultimately cause death in the human lung. In the third place, the yellow tubercle found in rabbits might be produced by any diseased matter, although French experimenters say that they failed to inoculate with yellow tubercle. Further, many things might be taken for gray granulations by the naked eye, especially emboli. Altogether, the subject was surrounded with so much doubt that it would be wise to reserve opinions on it. The inoculability of tubercle was further contradicted, to a certain extent, by the comparative rarity of its transmission from husband to wife, and *vice versâ.—Med. Times and Gaz.*, March 30, 1867.

---

18. *Effects of Flannel and Scratching on the Skin.*—Dr. TILBURY FOX justly observes (*Lancet*, April 13, 1867) "that some skins are so irritable in health as to be excited to an unbearable degree by the use of flannel, and whenever there is a tendency to exaltation of the sensibility of the skin, this may not only be heightened by the flannel, but the flannel may also give rise to decided physical alteration. In a very large number of cases of skin diseases pruritus is intensified and the disease even protracted in this way, and in proportion to the degree of uncleanliness. Flannel acts mechanically by augmenting, or rather conserving, the local heat, and intensifying reflex action. *Practical rule:* When you have a congestive state of skin, or any disposition to neurosis, take off the flannel, and place it, if necessary, outside the linen:—this will prevent any 'catching cold.' The diseases in which this is advisable are, chiefly—erythemata, roseola, urticaria, certainly syphilodermata in their early stages, scabies, and prurigo. A remembrance of this little practical point will sometimes give us the greatest cause to be thankful that we attended to it, trifling though it be.

"*Scratching* plays an important part in the modification of skin diseases, most of which are accompanied by itching; to relieve which, scratching is the natural topical application. What does it do?

"1. When there is no eruption, it may produce one. For example, in pruritus, it gives rise to excoriations, an artificial eczema, general enlargement and turgescence of the follicles of the skin, with, perhaps, abrasion of the cuticle over and above them; wheals in a nettle-rash subject; ecthymatous pustules in the ill-conditioned. Of course in all these cases there is a basis to go upon—a tendency to the several diseases produced. Scratch a healthy person, and the local injury is soon remedied.

"2. It augments and modifies existing eruptions. See in eczema how it inflames it, and increases the discharge and subsequent crusting; in lichen, the thickening of the derma. In scabies it gives rise to the peculiar 'scratched lines' so characteristic of the disease, and many of the ecthymatous pustules; in prurigo, the peculiar ecchymosed apices of the papules, and helps out the coarse urtication.

"3. When the disease is *non-contagious*, secretion, if present, may be transferred, and when acrid sets up local inflammation; and when *contagious*, scratching is the surest method of inoculation, as in the case of the contagious impetigo or porrigo. Children in this way transplant the disease from the head to various other parts of the body. Mothers, beyond a doubt, get it about their hands from children. As an instance of the effect of scratching, I may mention the case of a gentleman I have recently seen in consultation who has tried every remedy and doctor on the continent, taken the baths at Aix, and been treated by a large number of medical men in London for prurigo. He has taken drugs in any amount, and about sixty prescriptions were handed to me for my inspection. In this case, which was of three years' duration, the itching was cruel, the whole skin reddened, thickened, dense, hot, and exceedingly appreciable of change; whilst almost every conceivable application had been used. My impression as to the influence of scratching turned out to be correct; and, by dint of perseverance, the patient avoided this source of irritation, and is now practically well. In this case, in which the least scratching was followed by general reflex irritation, the teachings of sound reasoning in league with clinical reminiscences put to shame that empiricism which is the curse of cutaneous medicine."

19. *Milk Diet in the Treatment of Diseases of the Heart.*—Dr. Pécholier, of Montpellier, attributes great importance to the milk diet, not only in dropsy, like some of his predecessors, but also in other diseases, and especially those of the heart. He states that in active hypertrophy—namely, in those cases where the consequences of the development of the muscular fibres prevail over the embarrassment of the circulation caused by the dilatation of the cavities, the contraction of the orifices, or the insufficiency of the valves, and where, in consequence, the tension of the blood is great in the arteries, and the radial pulse is full and hard; in such cases, at their commencement, the milk diet, together with the use of digitalis, and sometimes without it, will, if continued long enough, induce at once an amendment of the symptoms, and even, at last, an absorption of the superabundant muscular tissue, and thus effect a cure. But in order to secure success, the patient must strictly obey the injunctions given to them; and hence the treatment is more successful in those cases where the lesion has produced great inconvenience and suffering than in those where the patients suffer little, because in the latter case they are unwilling to submit to rules of diet. Under the influence of the milk diet, it is found that the impulse of the heart diminishes, together with the palpitations, and the congested condition of the face, the brain, and the lungs. The patient experiences an unexpected improvement, and by the adoption of this plan life may be prolonged and rendered more supportable; and even where a cure cannot be hoped for, a great palliation of the symptoms may be induced.—*Brit. and For. Med.-Chir. Rev.*, April, 1867, from *Bull. Gén. de Thérap.*, Oct. 30, 1866.

20. *Chlorinated Mixture in Cholera.*—Dr. W. D. Dobie states (*Edinburgh Med. Journ.*, March, 1867) that in the very numerous cases of severe choleraic diarrhœa which occurred in Chester during the prevalence there of the epidemic, no remedy appeared at all equal to the chlorine mixture made according to the formula given at pp. 248–9 of this No.

"Many patients," he adds, "grateful for the speedy relief, spontaneously said, 'That is a wonderful medicine—I was better after the first dose.' There cannot be a doubt that many of these cases would have passed into true cholera had the disease not been checked in the early stage. This leads me to remark, that in houses where cholera had broken out, I generally ordered the whole family to take a teaspoonful of the chlorine mixture two or three times a day, and in no case, when this plan was adopted in addition to thorough ventilation and disinfection, did the cholera extend to other members of the household.

"Chlorine seems to have a decided effect in restraining the excessive exudation from the mucous membrane of the bowels. The slight acidity of the mixture probably adds to its usefulness, as it has been demonstrated that the osmotic current travels from the acid to the alkaline side of a membrane. The chlorine renders the retained secretions innocuous, and may possibly exert a special action on the blood itself if the osmotic current be reversed, even supposing that all active absorption from the bowels be in abeyance.

"Dr. Alderson, in a very interesting lecture, recently published in the *Lancet*, has called attention to the fact discovered by Poiseuille, that the hydrochlorate of morphia has a remarkable power in checking osmotic action. He goes on to observe, 'It was ascertained by him that when that substance was added to saline solutions the osmotic action tested between them and serum is immediately affected. The current is at first stayed, and after a time is actually reversed. This was confirmed by Bacchati, and it at once reveals the mode of action of morphia in checking diarrhœa, and in promoting constipation.' Further on in the lecture, Dr. Alderson remarks, 'Checking the flow of albuminous fluid from the bowels, on the principles displayed by Poiseuille and Bacchati, has reason in it; and I should advise for that purpose the use of morphia in the form of hydrochlorate; the hydrochlorate having shown a specific power not only to stay the current, but to reverse it.'

"I should therefore be strongly inclined, in the future of treatment of cholera, to add moderate doses of the hydrochlorate of morphia to the chlorine mixture during the continuance of the diarrhœa, and after its cessation, or when collapse had fairly set in, to give the chlorine mixture alone. I noticed that the chlorine mixture had a remarkably sedative action upon the stomach and bowels; the vomiting as well as the diarrhœa being restrained. My impression is, that the chlorine mixture, with the addition of chloric ether, was better tolerated by the irritable stomach than the diluted chlorine water given alone.

"The pulse, in cases where it was quite imperceptible at the wrist, became in a short time full and strong. The capillary circulation being restored, the surface became warm, and the purplish blue of the skin changed to a more natural hue. The cramps were subsequently less severe. Reaction was seldom violent, and I do not recollect one instance of secondary fever in the cases treated by chlorine.

"The secretions of the liver and kidneys in mild cases were rapidly restored. Another point to be observed is the remarkable comfort it gave to the patients; the excessive restlessness was much mitigated, and one man said, 'I could not live without that medicine.'"

21. *Use of Styrax Liquidus in the Treatment of Itch.*—Dr. W. SCHULTZE has made experiments with a mixture of styrax and olive oil for the cure of itch in the hospital at Magdeburgh. In the use of this remedy, which is to be rubbed over the whole body, with the exception of the head, great care must be taken that no folds of the skin are passed over. Baths are to be used only at the beginning and the end of the treatment for the sake of cleanliness, but are unnecessary in the treatment itself, and washing should also be forbidden. Twenty-four hours after a careful rubbing, the acari taken out of the itch-furrows were all dead. Styrax does not cause any irritation of the skin, and it has no direct therapeutic effect upon the itch eczema, the latter getting well of itself by the expectant treatment, and the itching disappears. Dr. Schultze, in reference to the resemblance in chemical composition between styrax and the Peru and Tolu balsams (also used in treating itch), makes some original remarks on the similarity of therapeutical effects produced by bodies of similar chemical composition. All the substances lately recommended for itch, as balsams, ethereal oils, benzoin, and petroleum, owe their efficacy to volatile hydro-carbonaceous compounds, and their therapeutical effects depend upon the length of time that these bodies are retained on the skin. Benzoin and petroleum are therefore less efficacious than the ethereal oils; but the balsams are better than these, and especially the balsam of Peru. In the experiments made with styrax by Dr. Schultze, the duration of the residence in the hospital lasted two days in twelve cases, three days in nineteen cases, five in seven cases, six in two cases, and seven in three cases.—*Schmidt's Jahrb.*, August, 1866.

SURGICAL PATHOLOGY AND THERAPEUTICS, AND OPERATIVE SURGERY.

22. *Some Complications of Gonorrhœa.*—Mr. DE MERIC, in a paper read before the Harveian Society of London (Feb. 21, 1867), offered a brief sketch of the common complaint called gonorrhœa, and stated that some urethral discharges were independent of contagion, very simple, easily controlled, and in general free from contagion; whilst others were just the reverse. The first kind of discharge might conveniently be called urethritis; the second, true gonorrhœa. On two complications of the latter—viz., gonorrhœal rheumatism

and gonorrhœal ophthalmia—he wished to present a few remarks. He related, with full details, the case of a gentleman lately under his care, where both complications had occurred. The facts of this case led to the inquiry whether the joint-complication were really dependent on the urethral discharge, or whether it was a mere coincidence. The author believed in this dependence, for the following reasons: Because there was a pathological sympathy, independently of gonorrhœa, between the inflamed urethra and the joints; 2. Because the articular affections have, by many observers, been noticed to exist along with urethral discharges; 3. Because, in certain subjects, joints have been known to suffer at each new attack of gonorrhœa. Those, on the other hand, who consider the so-called gonorrhœal rheumatism as a mere coincidence, alleged that the joint-complaint was observed but rarely, compared with the enormous number of cases of gonorrhœa. This the author not only conceded, but corroborated, by saying that he could, from his own practice, cite but three cases in hospital patients, and seven treated in private. The common cases of rheumatism had, therefore, nothing to do with the joint-complication in patients suffering from gonorrhœa; and we were driven to believe that something peculiarly predisposing must exist in the individual, which, added to the existence of the gonorrhœa, gave rise to the inflammation of the synovial membrane of the joint or the ocular conjunctiva. Nor should it pass unnoticed that the discharge must be *bona fide* urethral to generate the complication; as discharges from the glans, prepuce, vagina, vulva, or uterus, are never connected with rheumatism. Hence the rarity of the complication among women. He had, however, observed one case of this kind. The author now referred to the joints mostly affected; and stated that, out of his ten cases, six suffered in one or both knees, one on the hip, one in the articulation of the jaw, one in the ankle, and the tenth in several joints at the same time. Mr. De Meric then entered into some details respecting these cases, and said that he had not met with any where the tendinous sheaths, bursæ mucosæ, muscles, or nerves, had been affected; or else they had been overlooked, which might easily occur. Turning to therapeutics, Mr. De Meric, referring to the treatment he had adopted in his cases, which treatment had been very active, deprecated the fashion, now much in favour, of doing nothing; the cry now being to cure, or attempt to cure, various affections *without* the remedies hitherto in use. This applied still more forcibly to the eyes. In such cases, we had either to treat rheumatic ophthalmia, mostly connected with the joint affection, or the destructive conjunctival inflammation depending on actual contact with gonorrhœal pus. In both, especially in the latter, most active measures were required. The author had treated the two former successfully; but the cases had been very few—three of the former, and one only of the latter. He was confident that both the joint and eye-complication, which had formed the subject of the paper, deserved much attention, and should be combated with the means which nature had placed in our hands.—*British Med. Journal*, March 23, 1867.

---

23. *Shampooing in Sprains.*—M. Berénger-Féraud observes that it is remarkable that while some therapeutical agents are at once and even prematurely adopted, others, the efficacy of which has been well attested, remain for long periods neglected. As examples of this, he instances the alcoholic dressings of wounds, the forced taxis in hernia, and shampooing (*massage*) in sprain. Confining his attention to this last, he cannot but feel surprised that it has not become generally adopted, after the testimony of MM. Nélaton and Demarquay, and of so many recorded cases, in its favour. He does not think that the uncertainty of results, the fact that it is a practice followed by bone-setters, or our ignorance of the *modus faciendi*, ought still to be urged as reasons for its neglect. He furnishes a long array of references to cases in which the practice has proved thoroughly successful: and he argues that we should, by its scientific adoption, take a means out of the hands of charlatans which has very often conduced to their reputation. As to the manner of procedure, that may be easily acquired. As soon as the diagnosis has been made, very gentle passes are to be executed with the pulp of the thumb or the fore fingers in the direction of the periarticular tendons if a joint is the seat of sprain, or in that of the

fleshy fibres when this is muscular, employing from time to time some fatty body so as to prevent the skin becoming irritated. The friction must be directed from the extremity to towards the root of the limb, commencing some distance below the seat of pain and extending considerably above this. Gradually, as contact can be better borne, the pressure employed must be progressively increased, until at last considerable force is employed, the *massage* being continued for a quarter or half an hour, a whole hour, or more, until the pain ceases and the tumefaction has diminished. From time to time, slight intermitting pressure or percussions are employed, while the joint itself is moved. These movements, scarcely perceptible at first, are gradually to be increased, until at the end of the *séance* all the proper motions of the part are easily executable. In this procedure the pain must always be kept within bearable limits; and, in fact, its whole principle consists in enabling a part, for which the slightest touch is at first so painful, by the aid of carefully directed efforts, to execute all its natural motions with complete ease. The manipulations over, cold lotions are to be applied and rest enjoined. As to their repetition, this will vary in different cases, and will be indicated by the reappearance or augmentation of the pain after amelioration. In a recent case, and when the swelling is slight, one or two manipulations of moderate length and activity are often sufficient to secure a cure; while, if the sprain date back for days or weeks, and the lesions are deeper seated, more powerful and more prolonged procedures are required. In one of the cases which M. Bérenger-Féraud relates, a chronic sprain had to be brought, so to say, to the acute stage before it could be relieved.

In reply to the question whether sprain can always be thus cured, it may be answered affirmatively whenever we have to do with a simple case, unattended by severe complication, such as considerable laceration of ligaments, detachment of tendons, fracture of articular surfaces, and lesions of important vessels or nerves; and also when the manipulation is conducted with skill and patience during a sufficient period of time.—*Brit. and For. Med.-Chir. Rev.*, April, 1867, from *Bull. de Thérapeutique*, Jan. 30, 1867.

---

24. *On Opening Joints when the Seat of Traumatic Suppuration.*—Prof. ROSER observes that it is remarkable that difference of opinion should still prevail respecting J. L. Petit's practice of freely opening the joints when the seat of traumatic suppuration. It has not been for the want of opportunity, seeing the numerous bloody wars which have been waged since the time he wrote. But practitioners have approached the subject with preconceived notions which have prevented them profiting by experience, while the complications attendant upon the occurrence have surrounded it with difficulties. Under the influence of these Petit's practice has often been supposed, erroneously, to lead to unsatisfactory results. Thus, 1. Hemorrhage following the incision, its arrest by stuffing the wound with *charpie* would only aggravate the condition of the abscess. 2. In dread of such hemorrhage, the incisions were made too small, the wound either closing again, or valvular apertures preventing complete evacuation following. 3. Pyæmia frequently followed the incisions. At no time were *débridements* more eagerly practised than at the epoch of Dupuytren and Rust; and nowhere was pyæmia more rife than at the Paris Hôtel-Dieu and the Berlin Charité, so that the incisions came to be regarded by some as rather provocative than preventive of this complication. 4. Owing to the faulty mode of adjustment, a distorted or contracted limb was a common result. 5. Even when the operation was primarily successful, the healing of the parts was often delayed, and separation of cartilage and usure of the bones subjected to pressure were mistaken for caries.

At the present day these grounds of objection no longer exist. Hemorrhage is avoided by the methodical exposure and incision of deep-seated parts, under chloroform if required. The production of impediments to the free exit of the discharges by the valvular character of the apertures being recognized, can be easily guarded against. Pyæmia is no longer sought to be prevented, as in Dupuytren's time, by antiphlogistics, but by the dispersion or isolation of the patients, disinfection, ventilation, &c. The improved apparatus now in use prevents the contraction of the limb; and with a more careful diagnosis, there is no longer fear of confounding usure of the epiphyses with caries, a more speedy healing of the parts being also aided by the employment of the gypsum bandage. The essential point in this mode of treatment is not the *débridement* once so considered, but the complete evacuation of the decomposed exudations. This can only be accomplished by free openings, small incisions either closing up again or giving rise to valvular apertures. In all probability, such incisions will hereafter be resorted to more frequently for all the joints, and will be found a more conservative practice with respect to gunshot injuries of the hip and shoulder than the primary excisions now practised with such indifferent success. At all events, such free incisions should be resorted to when primary excisions have not been indicated or have been neglected, and when considerable collections of matter have taken place.—*Brit. and For. Med.-Chir. Rev.*, April, 1867, from *Archiv der Heilkünde*, 1866, Heft 6.

25. *Injuries of the Head.*—Prof. Roser is desirous of calling the attention of practitioners to a few points which he believes possess some novelty:—

1. *A traumatic brain-sound.*—This is heard in open wounds of the skull accompanied by an aperture in the dura mater, without injury to the pia mater; and it arises from the entrance of the air during the subsidence of the brain, and its exit on the heaving-up of the organ. Professor Roser has observed this sound twice at his Marburg Clinic. In one of the cases, a small rent in the exposed dura mater was covered with blood; and whenever this was displaced by coughing, a clacking sound became plainly audible by all present. In the other case, the patient stated on his entrance that there was a whistling noise in his head; and a hissing noise was heard by all the assistants.

2. *The pulsations of the brain when the dura mater is laid bare are sometimes absent.*—Judging from two such cases in which an autopsy took place, this would seem to be a sign of abscess behind the dura mater. In fact, the presence of a circumscribed exudation or extravasation may, by compression of the corresponding portion of the brain, render this anæmic and incapable of expansion during the systole. It might be supposed that this absence of pulsation is due to the feebleness of the heart's action during the agony of death; but in one of the author's cases the patient retained all his strength.

3. *The discharge of fluid from the cavity of the arachnoid is significant of superficial injury to the brain.*—When this is more considerable, a protrusion of cerebral substance, impeding the flow of the fluid, is more likely to take place. In none of his cases of considerable injury has Professor Roser observed this flow of fluid, while he has seen it continue for several days in some cases in which the injury has been obviously superficial.

4. In some cases in which the brain has been laid bare and the injury is only superficial, a kind of *fistula* may be formed analogous in its mechanism to fistula of the cornea. Just as in this there may be observed an interrupted flow of the aqueous humour, so in a case of exposed brain the author saw a similar discharge during the third and fourth week after the injury. While the wound was granulating most kindly, a bladdery projection appeared in its midst, and, bursting from time to time, spirted out clear water. This ceased as the wound cicatrized, leaving only a slightly prominent cicatrix.—*Brit. and For. Med.-Chir. Rev.*, April, 1867, from *Archiv der Heilkünde*, 1866, Heft 6.

26. *Extensive Fracture of Pelvis without Lesion of the Pelvic Viscera.*—Dr. Quinlan brought under the notice of the Dublin Pathological Society (December 8th, 1866) a remarkable case of this. He said that the specimen was taken from the body of a female, aged thirty-five, who was, upon the 18th of November, knocked down and run over by a horse, yoked to a heavy country cart, which was, however, empty at the time of the accident. Her symptoms were at first those of collapse; and when reaction had set in it was found that there was a fracture of the ala of the left ilium and a counter-fracture of the right os innominatum; the fracture of the left side being produced by the direct violence of the wheel passing over that side of the body, and that of the right by the pelvis being "stove in" by the agency of the head of the right femur,

which, by means of the right great trochanter resting upon the ground, acted as a wedge. Swelling and œdema of the right thigh and iliac region followed, and ended in a deposition of matter underneath the fascia of the right iliac fossa and down along the sheath of the vessels of the right thigh. There was a great deal of localized peritonitis in the right iliac region. The patient finally sank, from pelvic cellulitis, upon the eighteenth day.

A *post-mortem* examination was made twenty-four hours after death; and upon opening the abdomen there were found, in the right iliac region, a fluctuating swelling, to which the cæcum was attached by lymph, the result of the circumscribed peritonitis above alluded to. The cæcum was dark-coloured and inflamed, but there was no communication between it and the swelling. Laying open this latter there was found a great deposit of purulent matter, which was traced along the psoas muscle as high as the fourth lumbar vertebra, downwards, half way down on the thigh, along the sheath of the vessels, and inwards to a fracture of the os pubis, which will presently be described. This cavity contained, in addition to pus, some aplastic lymph and ecchymosed blood. Along the right ilio-pectineal line there was extensive ecchymosis under the peritoneum, as if the wheel, after leaving the ala of the left ilium, had pressed down upon this part. The bladder, vagina, uterus, rectum, and intestines were carefully investigated, and were found uninjured. Upon examining the osseous structures of the pelvis there was found, in the left os innominatum, a fracture extending from beneath the anterior inferior spinous process to a point about an inch behind the anterior superior spinous process, and breaking the piece off. There was another fracture commencing about an inch in front of the posterior superior spinous process, and running into the left synchondrosis. In the right os innominatum, where the counter-fracture had occurred, there was a longitudinal fracture, commencing at the upper and outer part of the obturator foramen, and extending backwards through the acetabulum and the ala of the ilium to the crest, at a point about two inches in front of the posterior superior spinous process. From the centre of this fracture there was another, extending through the ala of the ilium and the anterior superior spinous process. Turning to the acetabulum, the great longitudinal fracture, already described, was found passing through this cavity in a line slightly above its notch. From this there branched off a fracture of the shell of the acetabulum, running across the whole cavity. The cartilage of the head of the femur opposite these two fractures was eroded; and around the erosis the cartilage was very vascular. In the right pubic ramus there were two fractures, one of the thin portion of the descending ramus a quarter of an inch above the point of fœtal union, and the other of the ascending ramus of the ischium where it joins the tuberosity. Lastly, there was a dislocation of the symphysis pubis, the right pubes being dislocated forwards and slightly upwards, the inter-articular cartilage remaining attached to the left pubes, and having still connected with it a fragment of the right pubic bone. The sacrum and coccyx were uninjured.—*Dublin Quarterly Journ. of Med. Sci.*, Feb. 1867.

27. *Spontaneous Fracture.*—Dr. CASPARY relates the following interesting case, occurring in the person of a short, strong, healthy man, twenty-six years of age: In June, 1866, while ascending two steps which led to his dwelling, he felt a peculiar sensation in the left leg, as if unable to bear the weight of the body. He got indoors, however, and was even able to sit at table; but when he arose and attempted to walk, he cried out that he heard his leg crack, and that it was coming asunder. He could no longer stand, and was conveyed to bed. On examination, there was found to be a transverse fracture of the tibia at the junction of its upper and middle thirds, with but little mobility, and no crepitation or displacement. The patient exhibited no sign of rickets, nor did the bone itself present any abnormal character. A gypsum bandage was applied, and the limb laid on a firm mattress. The patient lay very quietly and without suffering; but when the bandage was removed, after three weeks, the limb remained precisely in the same condition. Under the advice of Dr. Wagner, assistant at Langenbeck's Clinic, the iodide of potassium was administered, that surgeon having found it of great utility in several cases of fracture of difficult

consolidation. In this case it proved of no utility, as at the end of another four weeks union had not taken place. A very thick gypsum bandage, which reached up above the knee, was now applied, and the patient was directed to walk about, which he was soon able to do tolerably well with a stick. In twelve weeks, and five months after the occurrence of the fracture, bony union had taken place. The most careful investigation of this case failed to show any general or local pathological condition capable of explaining the occurrence of the spontaneous fracture.—*Brit. and For. Med.-Chir. Rev.*, April, 1866, from *Berlin Klin. Wochenschrift*, 1867, No. 4.

---

28. *Internal Strangulation of the Bowel by a Band, associated with a Reducible Hernia, successfully treated by Operation.*—Dr. Thos. Bryant related to the Royal Med.-Chir. Society (March 12, 1867) a case of this to which he was called by Dr. Wilkinson. It was that of a gentleman, æt. 51, who had been ill for several days with symptoms of intestinal obstruction. The patient had been the subject of an inguinal hernia on the right side for twenty-five years for which he had worn a truss; during that period the bowel had come down on several occasions, but it had only given pain on one—some six months previously. On the morning of December 28, during the exertion of dragging up a tree, the hernia partially descended, but it was at once readily returned on the application of the hand; vomiting, however, soon appeared, and pain situated on the right side of the umbilicus. These symptoms continuing on the 29th and 30th, and increasing in severity, Dr. Wilkinson was sent for. A careful examination was then made, but no hernia was found; there was a large opening into the abdomen, but no swelling or pain even on deep pressure being made. On December 31 (the third day), the symptoms becoming more severe, and vomiting being fecal, Dr. Wilkinson, who saw the necessity for an operation, called in the assistance of the author. The seat of the hernia was then examined, but no indications of anything wrong in these parts could be made out, yet marked symptoms of intestinal strangulation existed; the pain in the abdomen was very severe; it was situated to the right of the umbilicus, and paroxysmal. Under these circumstances an exploratory operation in the region of the hernia was proposed, and power given by the patient to do whatever might be deemed the best. Chloroform was given, and the ring of the direct inguinal hernia exposed; no signs, however, of any strangulation of the bowel by the parts concerned in the hernia could be made out. A piece of omentum existed in the hernia sac, but no bowel. The finger could also be readily passed into the abdomen, and the neck of the sac was perfectly free. The bowel which came into view was, however, clearly strangulated, for it was of a bright cherry colour, and œdematous. Under these circumstances the ring was enlarged upwards and the strangulated bowel drawn down; the finger of the author's right hand was then passed along the bowel, used as a guide, upwards into the abdomen towards the point of fixed pain. When it had been passed as far as it could go, and as much traction had been put upon the bowel as was deemed justifiable, a tight band was clearly felt. The abdominal incision was then enlarged, and the band, which was made tense by the finger, was carefully divided by a pair of scissors passed into the belly, its points being well pressed into the pulpy portion of the finger till the band was reached. The wound was then closed. On the third day the bowels acted naturally, and a rapid convalescence followed. The author then made some few remarks upon the case, stating that it must be looked upon as one of strangulation of the bowel by a band, and that the hernia had nothing whatever to do with the symptoms. He then passed on to consider the points in the case with reference to the diagnosis, and related the particulars of a similar case which took place in his practice six years previously, in which such an operation as he had performed was proposed, but abandoned, and the patient died unrelieved. An analogy between the successful and fatal cases was then drawn, and the special practical points dwelt upon, the author concluding by stating that he was disposed to believe that in many cases of intestinal obstruction, when the symptoms are marked, and pain fixed and paroxysmal, whether with or without a hernia, relief might often be afforded by an operation, where

they are now left to die; and he expressed a hope that the cases he had brought before the notice of the Society would do something towards the attainment of that end.—*Med. Times and Gaz.*, March 23.

29. *Paraffo-Stearine as a Substitute for Starch, Plaster of Paris, &c., in Bandages and Splints.*—Mr. JAMES STARTIN states (*British Med. Jour.*, March 30, 1867) that he has been using what appears to him "to be an inexpensive, useful, cleanly, elegant, and efficient desideratum, in the treatment of varicose veins and diseased joints, instead of strapping, and also in all maladies or injuries where rest, equable support, and solidity of the parts affected are required. This consists in immersing 'Domett flannel,' 'Welsh flannel gauze,' the woven elastic or other bandage, or felt, either the common carpet felt or that prepared for surgical purposes, in a combination of equal parts of rock paraffine and stearine, as used for candles, which may be coloured to a flesh-tint with alkanet root, and liquefied to a little beyond the melting point (160° Fahr.), so as to render the composition of a temperature that may be readily manipulated without injury to the hand or part on which it is applied. Rollers or felt, the latter cut into the shape of the splint required, are to be saturated with the above melted composition, and applied whilst warm and flexible to the limb or joint; when, if needed, further strength and solidity may be given by varnishing a portion of the melted composition over the splint or bandage with a painter's brush, and afterwards smoothing the whole with the palm of the hand, until it assumes the surface of ivory, or the well-known appearance of a paraffine or stearine candle. A fold of linen, dipped in cold water, is finally to be passed round the bandage or splint, which immediately solidifies the melted paraffo-stearine, when the application is complete; and the wet linen may be continued as an evaporating lotion, if desired. Into this bandage or splint, openings may be readily cut by means of scissors curved on their cutting edge into the segment of a circle, or bent to an obtuse angle; the melted composition being afterwards applied over the cut edges of the opening, so as to form a complete solid case, allowing the escape, through such openings, of discharges, and the application of dressings. It will be perceived that, by dividing the paraffo-stearine bandage, and removing, say half an inch, or separating it into halves, and trimming the edges in the usual manner, splints will be formed having the exact configuration of the part to which they are to be applied, and that these splints can be lined with flannel, wash-leather, etc., and strengthened with the melted paraffo-stearine to any extent required."

Mr. Ewen, of London, he says, supplies the felt in sheets of convenient size, saturated with the composition, from which the splints can be cut, and after they have been moulded to the part requiring them as described.

All that is needed before employing these appliances, as prepared ready for use, is to put the canister containing the bandage and a portion of the paraffo-stearine for varnishing into boiling water until liquefied; and the piece of prepared felt may be held before a fire or immersed in water a little below the boiling point, until it acquires the requisite flexibility, when it can be fixed where required by the ordinary procedure, varnished and finished by the aid of the canister of paraffo-stearine and brush sold with it, and finally solidified by surrounding it with linen dipped in cold water. Or, the whole of the appliances described can be readily extemporized by the aid of a pound or two of paraffine or stearine candles, a jug or jar in a saucepan of boiling water for melting the same, a rolled flannel, Domett, or other bandage, and a shaving-brush; or, should a splint and not a bandage be preferred, a strip of felt carpet, cut into the required shape, and also rolled together, so as to be immersed in the melted candle composition in the jar.

When a removal of a bandage is required, Mr. S. says it may at once be softened and taken off by brushing it over with benzine. This last article, he adds, "will be found a most useful surgical accessory, not only to clean the skin and hair from all their natural or acquired oily or sebaceous secretions, but also to remove grease, plasters, etc., from the cutaneous surface without causing local irritation."

30. *Dressing for Wounds.*—M. **Foucher** employs the following mixture as a dressing for wounds: Alcohol 400 parts; glycerine 625 parts; chlorate of potash 40 parts. This forms a transparent fluid which does not stain the dressing, and may be very useful in flaccid or unhealthy wounds.—*Journ. de Méd. Pract.*

OPHTHALMOLOGY.

31. *Relative Value of Atropia and of Mercury in the Treatment of Acute Iritis.*—Mr. T. **Pridgin Teale**, of Leeds, states (*R. L. Ophthalmic Hosp. Rep.*, vol. v. pt. 2, April, 1866) that during the last two years and a half, he has recorded in a tabular from the cases of acute iritis which have come under his care, in order to test the value of certain views of treatment which he has arrived at from the observation of such cases. He excludes from his table all cases of traumatic origin, all those which are secondary, *i. e.*, caused by extensive adhesions of the iris to the capsule of the lens left by previous attacks, all subacute forms travelling forwards to the iris from the deeper structures, and all cases occurring in children. These are excluded in order to simplify the inquiry, and restrict it to those acute forms, generally syphilitic, which occur in the previously healthy eye of the adult, and which, if neglected, rapidly endanger vision.

The table comprises 22 cases, and they seem to Mr. T. to justify the following conclusions and principles of treatment:—

"1. Iritis can generally be cured, quickly and perfectly, by atropine alone, or by atropine and mercury combined, without the aid of other remedies. How far opium, blisters, leeches, and venesection aid and accelerate progress I have not yet tested, wishing in the first instance to determine the value of the remedies under consideration, and then to make the results herein obtained a starting-point for further inquiry.

2. The presence or absence of syphilis does not affect the question of treatment.

3. Many, perhaps one-half, of the cases of iritis, *whether syphilitic or not*, can be cured by *atropia alone.*

4. Those cases in which atropia fails to dilate the pupil in 24 or 48 hours require mercury. In occasional cases the application of leeches renders an eye susceptible of dilatation which at first was unaffected by atropia.

5. When mercury is required it ought to be introduced into the system rapidily.

6. If the system is to be affected by mercury, the mercury ought to be introduced by *the skin, not* by the *stomach.* When this drug is introduced by the stomach the digestive powers are depressed at the very period when their healthy function is most needed. When introduced by the skin its full remedial effects are obtained without any impairment whatever of the powers of nutrition. It is my rule never to introduce mercury by the stomach when I wish to obtain rapidly the constitutional effects of the drug.

7. In those cases which require mercury it is sufficient to render the gums slightly tender. When the gums are even slightly affected we have therein evidence of the introduction of mercury into the system in quantity sufficient to turn the scale in favour of health, and carry the case to a successful issue. Therefore the moment we find the gums undoubtedly tender, or beginning to be tender, we may suspend the drug.

8. In most cases the constitutional effects of mercury, indicated by tender gums and improvement of symptoms, may be obtained on the second, third, or fourth days, provided the patient be confined to bed. Absorption of mercury by the skin appears to be *much more* rapid when the patient is confined to bed than when he is allowed to go about as usual.

9. Atropia should be used during the whole period of treatment, except where it causes great pain or increases conjunctival irritation, in which case it

may be *temporarily* suspended, or dissolved in glycerine and applied to the skin.

10. That in cases requiring mercury the coincidence of tenderness of gums, of relief from pain, and of the action of atropia on the pupil is almost absolute, even to an hour or two. Perhaps in cases more severe than those recorded, with great effusion of lymph, the visible effects of atropia may be delayed till a later period. On this point I do not possess evidence.

Let us now inquire how far these conclusions are justified by the cases, and what are the general results of treatment.

Treatment.—Of the 20 cases, eleven were treated by atropia alone, nine were treated by atropia and mercurial ointment combined. In one or two cases a dose of Dover's powder was given when pain was excessive, and in some others salines were given during the application of the mercurial ointment if the skin were hot and not perspiring. Leeches were used, I believe, in three cases only. Two cases had taken mercury before coming under my care.

Question of Syphilis and its relations to Treatment.—Thirteen cases were undoubtedly syphilitic. Of these five required mercury, eight recovered under atropia alone. In seven, syphilis was either denied or not made out. Of these, four required mercury, three were cured by atropine alone.

Rapidity of Mercurial Effects.—Of the nine cases in which mercury was required, one used the ointment 24 hours, a second 24 hours, having previously taken blue pill five days without benefit; a third and fourth used the ointment two days, a fifth and sixth three days, a seventh and eighth four days, the ninth twelve days. So that of nine cases of iritis in which mercury was used, one only required the application of the ointment for more than four days.

Rapidity of Recovery.—Of the 20 cases, seven recovered good sight and pupil within two weeks, one within a 'short time,' five within three weeks, three within four weeks, three within eight weeks, one within three months, the 20th was relieved from pain with partial recovery of sight.

Perfection of Sight.—Fifteen read No. 1 Jaeger, three (including the second eye of one case) read No. 2, two read No. 6, one could read No. 18.

Perfection in Pupil.—Twelve recovered with a perfectly active pupil free from adhesions, in five there was slight or single points of adhesions, in one there was closed pupil, and in two the condition of pupil is not recorded.

Duration of Disease before Treatment.—In eight the disease had existed not more than a week before coming under my care, in four not more than two weeks, in six less than two months, in one three months, and in one three months and a half.

Condition of Vision before Treatment.—In six cases vision was limited to perception of shadows; in two it is described as dim; in two the patient could not read Jaeger No. 20; in three the patient read No. 20; in two No. 16; in three No. 4; in two the condition of vision is not recorded.

Disappearance of Mercurial Effects.—In all the cases, although no special note is made on this point, the constitutional effects of the mercury passed off in a day or two, and in none do I recollect to have met with any injurious effect whatever which could be traced to the use of mercury.

Relapse of Iritis.—In one case only have I any record of a relapse, and this relapse disappeared rapidly under atropia alone. This fact tends to confirm Gräfe's assertion 'that the principal cause of recurrence of iritis is the existence of synechiæ,' in other words, when iritis is cured with a pupil free from adhesions it seldom evinces a tendency to recur.

Mode of using Atropia and Mercury in Iritis; *Use of Atropia.*—On first seeing a case of iritis, whatever its degree, I order atropia, of the strength of two grains to the ounce, to be dropped into the eye six times, at intervals of five minutes in the morning, and six times also in the evening. On the following day, if the pain is lessened and the pupil is beginning to dilate, I conclude that the case is slight, and that atropia alone will cure it. If, however, the pupil is affected, and the symptoms are unabated, I commence mercurial treatment without delay.

Use of Mercury.—The patient is ordered to lie in bed, to wrap round each arm a broad piece of flannel, well smeared with mercurial ointment, and to wear this mercurial bandage until the gums are slightly tender, a small quantity of fresh ointment being added every evening. It is not necessary to *rub in* the ointment. I suspect that the 'rubbing in,' by producing irritation, impairs the absorbing power of the skin.

Discontinuance of the Mercury.—As soon as the symptoms of the disease begin to abate, or the gums begin to be tender (and these two conditions are generally coincident) the mercury is discontinued. In none of these cases has mercury been given by the mouth (except in two cases, which had been so treated before coming under my care), and in none has the ointment been rubbed in.

Discontinuance of the Atropia.—As soon as the pupil is fully dilated. as far as any adhesions will permit, the instillation of atropia is reduced to once or twice a day. and continued at this rate as long as redness or tenderness of the eye remains.

This mode of treating iritis coincides very nearly with that described by Gräfe (*on Iridectomy*, New Syd. Soc., 1859) in using atropia as the main remedy, and mercurial inunction in cases too severe to yield to the atropia. It differs from it in dispensing with *rubbing in*, and with the use of mercury by the mouth. Mr. Dixon, in his early remarks on iritis, condemns belladonna; in his later work he speaks timidly of its use as an appendage to other treatment. The cases here recorded prove Gräfe to be correct in claiming atropia as the sheet anchor, and in making other remedies subordinate.

William Lawrence and most ophthalmic writers give mercury by the mouth, and do not mention its introduction by the skin. They speak of the coincidence of the improvement in the symptoms with the first appearance of constitutional effects of the mercury, and make this the signal for the reduction, not as I have done, for the entire omission of mercury.

Blood-letting, local and general, is usually urged as indispensable in iritis. That it is not so I think the foregoing cases prove. I believe, however, that local blood-letting may be a valuable addition to other means of treatment, and that it facilitates the absorption of atropine, and accelerates its effects.

Note on the Action of Atropia.—Writers on iritis generally rest the credit and value of atropia or belladonna on its power of dilating the pupil, in setting at rest the muscular tissue of the iris and ciliary body, and in diminishing the risk of the formation of synechiæ. I cannot, however, but suspect that it does more than this. that it acts as a direct sedative on inflamed and congested tissues, and that much of its power depends upon its influence in contracting the bloodvessels. I cannot in any other way explain the remarkable value of this drug in many cases of ulcer of the cornea, and so-called strumous ophthalmia, a large proportion of which I treat by atropia only. Nor can I explain in any other way the immediate improvement, and rapid and complete recovery by means of atropia alone, of many cases of syphilitic iritis. That atropia does reduce the size of bloodvessels I have no doubt, having several times satisfied myself of the fact by observing the calibre of delicate vessels traversing the cornea before, and shortly after the instillation of atropia."

---

32. *Inflammation of the Eye occurring some little time after Smallpox.*—Inflammations of the eye not unfrequently occur in patients convalescent from smallpox. Mr. Hutchinson states (*R. L. Ophthalmic Hosp. Reports*, vol. v. pt. 4) that: "At the Ophthalmic Hospital we not unfrequently admit cases of this kind. The eye having been attacked at a period varying from three to six weeks after the outbreak of the exanthem, a central ulcer of the cornea is the most common condition, and I have rarely seen both eyes affected, the ulcer frequently spreads rather widely, but not deeply. It is exceedingly intractable. There does not appear to me to be any good reason for alleging that these cases are merely scrofulous ophthalmia brought into action by the debilitating influence of a severe disease. Sometimes it occurs in delicate children, but half the cases I have seen were in adults of good health and who had never shown any indications of scrofula; nor could the keratitis be regarded as the direct result of debility, for the patients had regained appetite and a fair amount of strength, as proved by the fact that they were attending as out-patients, and in

the habit of walking considerable distances. Tonics do not appear to assert any material, or, at any rate, not quickly, and change of air has in one or two instances been the only influence under which benefit was obtained. A mild form of iritis also sometimes occurs as a sequela of smallpox. I have seen three or four instances of this, in two, at least, of which there was no inflammation of the cornea. I do not ever recollect to have seen both eyes affected.

Dr. Mackenzie mentions iritis as a not unfrequent combination of post-variolous keratitis when it occurs in adults; but he speaks of it as usually occurring about the twelfth day. That is, at the date at which the severe ulcerations of the cornea with hypopyon, &c., are usually observed. The cases to which I refer were examples of almost pure iritis, and some of them were at much later periods."

---

33. *Loss of the Left Eye from the Lodgment within it of a Portion of a Gun-Cap. Inflammation of the Stump more than Seven Years after the Injury, followed by Sympathetic Ophthalmia of the Right Eye.*—Mr. GEO. LAWSON, Ass. Surg. Royal London Ophthalmic Hospital relates (*R. L. Ophthalmic Hospital Rep.*, vol. v., pt. 1) the following very instructive case of this.

Geo. S., æt. 33, by trade a confectioner. Eight years ago, by way of amusement, he was exploding some percussion caps by striking them with a hammer on a stone. The caps were cheap ones, which he had procured at what he called a cheap Birmingham shop, in the country, at the price of 25 for a penny. Whilst so engaged a fragment of one of the percussion caps flew into the left eye, and there lodged itself.

The eye inflamed and suppurated, and, after much suffering, shrunk to a mere stump; but the foreign body, as far as he knew, still remained in the shrunken remnant of the eye. From that date, for more than seven years, he was completely free from pain; the lost eye gave him no inconvenience. The sight of the right eye was remarkably good, for he was a crack shot at long distances in the volunteer company to which he was attached.

Last February, for the first time, the stump of the left eye became painful and inflamed, and soon afterwards he noticed the sight of the right eye was foggy, but he suffered no pain in it. This attack continued about three weeks, the sight of the right eye becoming rapidly worse. Under treatment he recovered, but the sight of the uninjured eye was much impaired. Since then the stump has been repeatedly inflamed, and with each attack the right eye has sympathized, and on one occasion became acutely affected and very painful.

After each attack the sight of the right eye was materially injured, and although all irritation would for a time subside under treatment, yet he never regained any of the vision he had lost.

On September 22d he applied to the Royal London Ophthalmic Hospital. The following was the state of the two eyes:—

Left Eye.—A shrunken and contracted stump, inflamed, and looking red, and irritable. Through the centre of some cicatrix tissue, which occupied the place of the cornea, was projecting a metallic point, evidently the extremity of the piece of the percussion cap which had been so long lodged in the eye, and which was now making its way to the surface.

Right Eye.—Slightly pink and irritable. The cornea clear. The pupil fully the normal size, but fixed and completely adherent to the lens capsule, and the pupillary area of the capsule of the lens covered with a film of lymph. The striation of the iris very indistinct, and the anterior chamber very shallow, the plane of the iris having been approximated towards the cornea.

He is unable to read 20 of Jaeger's test types or to count fingers. He can only just make out the hand when held before his eye, or distinguish any large object in front of him.

He was at once admitted into the hospital, and I removed the stump of the lost eye. On making a section of it, the piece of the percussion cap was seen to have made its way towards the surface, and was projecting by one of its edges through the cicatrix tissue in the front part of the stump.

The deep tissues of the eye were all so matted together as not to be recognized.

The man made a good recovery from the operation, and will continue to attend the hospital as an out-patient. The right eye has decidedly improved. It is less irritable, and the pink appearance has disappeared. No amendment. however, can take place in the vision until some operation has been performed, as the pupil is bound down to the lens capsule, and the pupillary area is blocked up with lymph.

Clinical Remarks.—This case is a sad, but a very instructive one. It illustrates the danger of allowing a foreign body to remain in the eye, even though the eye for all useful purposes has been destroyed by it. Sooner or later it is certain to be a source of pain and trouble to the patient, and to induce an inflammation in the injured eye, which is peculiarly liable to excite a sympathetic ophthalmia in the sound one. In this patient there are some points worthy of notice.

1st. The injury was caused by the explosion of a cheap percussion cap. Unfortunately these cheap caps are made of an inexpensive and brittle alloy, and scales of them often become detached during explosion, and fly off with such violence as to lodge themselves in any portion of the body with which they come in contact. In nearly all the eyes which are destroyed by percussion caps, and they are many, it will be found on inquiry, that the caps used were the toy, or the cheap ones, such as children buy for their play guns, or such as are employed in firing at targets in the streets for nuts.

2d. The length of time which a foreign body has remained imbedded in an eye, is no guarantee that the danger of its presence has passed. In this patient over seven years elapsed before it began to give trouble, but when the stump of the lost eye became inflamed, the sound eye was speedily involved in that terrible disease, now so well known as sympathetic ophthalmia.

3d. The sound eye in this patient was sympathetically affected without its suffering in the first attack any pain as a warning of its presence, and this is one of the peculiarities of the disease. It will often creep on unheeded by the patient, the impairment of the sight being so gradual as at first not to draw sufficient attention to it; and it frequently happens that the disease is fully established before it comes under the surgeon's care.

Since the source of irritation, the stump of the lost eye, with the foreign body within it, has been removed, the other eye has decidedly improved.

Time must now be allowed for all irritation to completely subside, and after an interval of some months if the eye continues so long in a quiescent state, an operation will be performed to establish a new pupil, and if the lens on the removal of a portion of the iris, should be found cataractous, it will be removed. There is yet a fair prospect that the man may recover a useful eye.

---

34. *On Excision of the Eyeball in the Acute Stage of Traumatic Ophthalmitis.*—By Jonathan Hutchinson, Esq. As an opinion is, I believe, held by some high authorities that the excision of globes when acutely inflamed is dangerous, I think it desirable to record the fact that during the last year I have performed numerous such operations without the slighest ill result. Whenever I am satisfied that an injured globe is utterly lost, I always advise its excision without loss of time. By adopting this course the patient's suffering, often extreme, is at once put an end to, and I think, also, the risk of sympathetic inflammation of the other eye is avoided. I have excised globes in all stages of inflammation, and have never seen the slightest ill consequence, whilst the patients have invariably been most grateful for the complete relief afforded. The hemorrhage is usually rather more than when the cellular tissue is not infiltrated, and the operation is much less easy of peformance (especially when the globe is in a state of proptosis from inflammation), but these are objections of very minor consequence. In a recent case of peracute inflammation after a blow, in a poor girl of 18, the globe was pushed out of the orbit by swelling, the lids partially everted, and the conjunctiva chemosed. In this case, owing to the matting together of the tissues, and the soft, flabby state of the sclerotic, I had more difficulty in the excision than I could have believed possible. Although, after the removal of the globe, the lids were still left tense, dusky, and prominent from swelling, yet the most complete relief was given, and the patient, who had

been out by ten days and nights' incessant suffering, was looking quite happy on the following day.

A month ago I excised an eyeball on account of traumatic ophthalmitis within forty-eight hours of the accident—by much the shortest period within which I have ever felt justified in advising the operation.[1] A lad of 14 was going through the street one Saturday evening, and stopping to watch a man shooting on a nut-stall, the cap flew, and a fragment entered his eye. Severe pain commenced at once. He came to me on the Monday morning with a small hypopyon, the posterior lamina of the cornea dotted over with small accumulations of puro-lymph, acute iritis, and opaque vitreous. He had no perception of light. Mr. Dixon and Mr. Streatfeild both saw him with me, and both agreed in the opinion that, although the cornea was still almost clear, there could be no doubt that the organ was lost. The lad willingly consented to its removal, so great had been his suffering. After excision I found a portion of gun-cap behind the ciliary processes, the whole region of which was covered by puro-lymph in a coherent membrane. The vitreous was still, for the most part, translucent; but in various parts of its substance films of yellow lymph were visible. There was also lymph on the surface of the retina at almost all parts. At so early a stage of the inflammatory process, in such a structure, microscopic examination would have been most interesting, but I was compelled, by the pressure of engagements, to let the opportunity slip.—*Royal London Ophthalmic Hospital Reports*, Dec. 1866, vol. v. pt. 4.

35. *New Method of Extracting in Cases of Cataract.*—Dr. C. B. TAYLOR, Surgeon to the Nottingham Eye Infirmary, writes to the editor of the *Ophthalmic Review* (see No. for April, 1867) that he "was led to work out this method from observing the disastrous results of two cases operated upon with Schuft's spoons, and from having in my own practice a case operated upon by Mooren's method, in which the flap was accidentally turned down some hours after the successful completion of the operation. It struck me, then (Oct. 1865), that, to insure success in such cases, it would be necessary to make an incision flap-like, and large enough to permit the exit of the lens without the use of any traction instrument, and yet not so large as to be liable to be forced forwards by protruding vitreous, or reflected by any sudden accidental or involuntary motion of the patient. After numerous experiments upon pigs' eyes, and some operations on the dead subject, I arrived at a solution of the problem, and have since operated by the method about to be described, in all cases of senile cataract coming under my care."

He calls this method "extraction by linear flap." In his first cases he "used a ground-down cataract-knife, reduced to about the size of the ordinary secondary cataract-knife, sold in most cases of ophthalmic instruments; but since reading an account of von Gräfe's method, I have adopted his knife. As the risk, even if vomiting occurs, is very slight with this form of incision, I prefer to have the patient narcotized. Keeping the lids apart with the stop speculum, I fix the eye with a pair of forceps, and enter the knife about the junction of the middle with the upper third of the cornea, say 2½ lines lower down than the point of incision in von Gräfe's method, and rather more forward in the corneo-sclerotic junction, bringing out the point at a counter-puncture similarly placed; I hold the knife parallel to the iris, and cut upwards about two lines and a half, then turn it forwards, and complete the section by a gentle sawing movement, thus forming a very small elongated flap, situated well back in dense tissue, with sloping sides and transverse centre, which last occupies the summit of the true cornea.

"I argued, and frequently demonstrated, that such a wound would be large enough for the exit of the lens if its posterior lip were gently pressed back and the eyeball manipulated; while, being made in the dense tissue of the corneo-sclerotic junction, it would not gape or be pushed open by protruding vitreous.

---

[1] This statement, of course, applies only to removals on account of the inflammation, and not for the direct effects of the injury. Where the eyeball was hopelessly destroyed by laceration, I have sometimes removed its remains immediately.

"As a matter of practice, I find it impossible to reflect the linear flap; that the lens emerges much more readily in a line with its vertical axis than when a movement of rotation is necessary to make it present at the wound; that the eye may be safely held until, in the second stage of the operation, a portion of iris is excised and the capsule opened; that the lips of the incision are accurately retained in apposition, and, being situated in vascular tissue, the wound heals much more readily than in the ordinary flap-operation. In operating by this method, I have frequently adopted Mooren's precaution, and excised a piece of iris six weeks previously; latterly, however, I am inclined to consider that there are no advantages connected with a preliminary operation that compensate for its manifest inconvenience, and I have found, in some cases, that, from a want of correspondence between the wound made in extraction and the smaller one used in iridectomy, the iris is more apt to prolapse and be trapped at the corners than if it is excised in proportion to the length of the incision at the time of extraction. In conclusion, I may be permitted to observe that the comparatively larger size and elasticity of the wound in my operation permits the lens to be more readily extruded, without the introduction of instruments, than in von Gräfe's method, while, from its position, the risks from loss of vitreous are very much diminished.

"As to results: since I adopted this method, I have operated upon forty-one cases of cataract in succession, *without selection*, and including many most unfavourable cases, four being upwards of eighty, two eighty-five years of age; of these, forty recovered without a single bad symptom, and one, a most unpromising case, was followed by iritis, closed pupil, and subsequent atrophy of the globe. Thirty-one were cases of extraction by linear flap, two by Schuft's method, and the remainder by Teale's suction method."

36. *Operation for Solution of Senile Cataracts commenced at an early period without allowing the Cataract to ripen.*—Mr. J. Hutchinson states (*Royal London Ophthalmic Hospital Reports*, vol. v. pt. 4) that in a future number of that Journal, he proposes to give a detailed report of a series of cases in which he is now trying needle operations for senile cataracts. The plan is: "1st. To commence the treatment as soon as the opacity is advanced sufficiently to cause serious inconvenience to sight, and thus before the lens has become very hard; 2d. To do very little each time, and to do that little very carefully, so as to avoid any displacement of the lens; 3d. To allow a long interval between the operations; and 4th. To use atropia very thoroughly. In the cases now under treatment, eight in number, I have, as yet, had no drawback whatever. In all, solution is steadily proceeding. The patients have none of them been confined to the house, and none have suffered any material pain. Even if in some it may prove needful to use a spoon to extract the nucleus, still I anticipate advantage from having got rid of the cortical substance beforehand."

MIDWIFERY.

37. *Treatment of Labour Complicated with Ovarian Tumour.*—Dr. W. S. Playfair related to the Royal Med.-Chirurg. Society (May 1, 1867) a case of labour obstructed by ovarian tumour which had come under his observation. The pelvis was occupied by a solid ovarian growth, which was not diminished by puncture, delivery being finally effected by craniotomy. He then proceeded to analyze the details of fifty-seven similar cases, collected from various sources, pointing out the results of the various methods of treatment employed. He showed that nearly one-half of all the cases left to nature had proved fatal, probably on account of the bruising and contusion to which the tumour was necessarily subjected during the passage of the head. On the other hand, all the cases in which the tumour had been diminished in size by puncture recovered; and he strongly advocated this treatment, even when there was

apparently sufficient room to admit of delivery without it. One-half of the cases in which craniotomy was resorted to had also ended fatally. In several of these cases perforation was only employed because the child was dead, although there was sufficient room for the passage of the head; so that the results of this treatment were also most unfavourable for the same reason as when the case was left to nature. Dr. Playfair concluded by briefly reviewing the history of the other methods of treatment employed, such as turning and the Cæsarean section.—*Lancet*, May 26, 1867.

38. *Cephalotripsy.*—Dr. Kidd, in a communication read before the Dublin Obstetrical Society (Jan. 12, 1867), recommended the adoption of the cephalotribe in all cases of embryotomy in preference to crotchets, hooks, and craniotomy forceps, for the following reasons:—

1st. By its use the base of the skull, the thorax, or pelvis may be completely broken up and reduced to the smallest possible dimensions without injury to the mother.

2d. It holds the part to which it is applied so firmly that it can be rotated if necessary and extracted with ease and safety.

3d. It causes no spiculæ, as the crotchet does, to tear the soft parts of the mother.

4th. It does not, like the crotchet, endanger the mother or the hands of the operator by slipping or perforating the part to which it is applied.

5th. It reduces, for the foregoing reasons, the dangers of embryotomy to a minimum, and allows of its performance in cases where it would not otherwise be possible.—*Dublin Quarterly Journ. Med. Sci.*, Feb. 1867.

39. *Protracted Gestation.*—Dr. C. Joynt, of Bombay, records an interesting case of this in a lady 30 years of age, who had been pregnant six times, two of them ending in miscarriage. She often suffered from excessive menstruation with neuralgia of the ovaries, and was also the subject of frequent hystero-epileptic fits.

The data upon which Dr. J. fixes the minimum duration of the prenancy are:—

(*a*). The date of last menstruation, 28th December, 1863, to 2d January, 1864.

(*b*). The occurrence of characteristic morning sickness in January.

(*c*). The perception of the fœtal movements on the 28th of March, and their persistence.

(*d*). The threatened miscarriage in May, after the completion of the calculated fourth month of pregnancy, corresponding to the period at which she actually miscarried on two former occasions.

(*e*). The existence of a well-marked utero-placental murmur, with abdominal enlargement in August; and

(*f*). The occurrence of spurious labour pains in the beginning of October (marking, as I interpret them, the termination of the normal duration of gestation), when the cervix uteri was found obliterated. Any one of these signs taken by itself might be open to objection; but, in the aggregate, they afford evidence as strong as is ever likely to be adduced in proof of protracted gestation. Besides these, however, my case furnishes another fact of importance in fixing the date of conception. My patient was, at the time I speak of, separated from her husband in order that she might be under my immediate care, being only visited by him occasionally. He was absent from the 26th of December to the 6th or 7th of January, when he returned and remained with her till the 10th. Before he again visited her the characteristic morning sickness had satisfied me that pregnancy had already commenced. This definitely fixes the 10th of January as the latest date on which conception could have taken place; so that the minimum duration of pregnancy must have been 317 days, or about six weeks more than the average.—*Dublin Quarterly Journ. of Med. Science*, Nov. 1866.

AMERICAN INTELLIGENCE.

ORIGINAL COMMUNICATIONS.

Pathology and Treatment of Glucosuria and Albuminuria.—[The following note addressed to us by M. CAREY LEA, Esq., contains, it appears to us, some highly important suggestions, and we would invite the attention of our readers to them.]

My Dear Sir: I beg to call your attention to the inclosed article of M. CLAUDE COLLAS in the *Moniteur Scientifique.* M. Collas expresses the opinion that diabetic disease depends upon an incapacity of the system to convert sugar into an insoluble modification. This incapacity he attributes to a deficiency of *phosphate.*[1] His proof he rests on the following observations:—

That during gestation, there is unusual difficulty in healing fractures, owing to the appropriation of every particle of earthy phosphate to the fœtus to form its bone, and at the same time there is a great tendency to glucosuria.

To prove that phosphates have this power, he makes the following experiment. A solution of ordinary diphosphate of soda is made in water containing carbonic acid and is mixed with cane sugar. In a fortnight this mixed solution will be found to be thick and viscous. He therefore recommends the administration of phosphates and phosphoric acid.

The reasoning is certainly ingenious. I have not had time to repeat M. Collas' experiments. My object is simply to call attention to the fact that this principle, if it should prove to be true, is susceptible of immense extension.

In *albuminuria*, a most valuable constituent of the system is wasted through the urine. If M. Collas's reasoning is true with respect to the waste of sugar, by parity of argument, it seems probable that the loss of albumen may arise from the absence of fixing principles, and this would immediately suggest the administration of remedies capable of coagulating albumen, such as mineral acids, alkaline nitrates, &c. In fact the number is so extensive that the only difficulty would seem to be in the selection.

Very truly, yours, M. CAREY LEA.

Dr. I. HAYS.

PHILADELPHIA, April 26, 1867.

---

[1] M. Collas, in the article referred to by Mr. Lea, calls attention to the facts demonstrated by M. Claude Bernard, that sugar is formed in the system in health, and that this substance is necessary for nutrition. But M. C. remarks the substances required for the nutrition of our organs reach them in a soluble condition, and that the agent which renders them fixed is still unknown. M. C. thinks that this agent is the phosphate of lime which has the property of converting sugar into glucose, which is almost insoluble, and that it is that agent which precipitates and fixes the sugar in the organs. This, he thinks, explains the phases of glucosuria. The natural sugar, instead of fulfiling its function, is eliminated by the kidneys in greater or less quantity, according to the severity of the disease. It is then not the sugar which is injurious, for it is eliminated, but the evil arises from the deficiency of phosphates, and, consequently, the organs being no longer nourished, the system suffers and death ensues. On this account M. Collas reprobates the regimen usually prescribed for diabetics, the forbidding them wheat bread. This privation is useless, and is with difficulty endured by patients, deranges nutrition and retards a cure.

Pyæmia? Consecutive to a Gunshot Wound which had healed Sixteen Months previously, resulting in Death. By S. J. Radcliffe, A. M., M. D., of Washington, D. C.

Martin Armstrong, First Sergeant, Company "M," Sixth U. S. Cavalry, received a gunshot flesh wound of the left thigh in action near Williamsburg, Va., by a musket-ball, May 4th, 1862. The ball entered at the upper third external aspect, passing backwards and downwards, and emerged about the middle of middle third, posteriorly. He was sent to the U. S. A. General Hospital at Fortress Monroe, Old Point Comfort, Va., remaining there ten weeks, when he was returned to his regiment entirely recovered. He went through the whole of the several arduous campaigns to the battle of Gettysburg, Pa., without the least inconvenience from his wound; was taken prisoner at Fairfield, Md., July 3d, 1863, taken to Richmond and Belle Island, by way of Staunton, Va., on foot, arriving at Belle Island July 20th, at which place he was paroled on the 22d, left the enemy's lines 23d, arrived at Annapolis, Md., and College Green Barracks 25th, Camp Parole Aug. 2d, and admitted to the U. S. A. General Hospital, Div. No. 1, Sept. 20th following.

On admission, he gave me the above history of himself, and added he had had good health up to the day previous, when he was attacked with a severe chill followed by a burning fever, and great lancinating pain at the seat of his former wound in the thigh. His skin was hot, pulse 95 to 100, respiration about 30, eyes turgid, tongue furred, bowels inclined to be loose, yellow hue of the surface and conjunctiva, and he complained of great pain posteriorly between the eschars over the orifices of entrance and exit of his wound, or more properly in the course of the great sciatic nerve. His thigh was not swollen, exhibited no evidences of local inflammation, cicatrices were strong and firm, but the parts were a little tender on pressure. As there were a number admitted about that time with the various forms of malarial fever, with biliary complications similating this, I ordered quiniæ sulph. gr. iss. pil. hydrarg. gr. $\frac{1}{2}$, and capsicum gr. $\frac{1}{2}$, to be given him every four hours; a blister 3×3 to be put over seat of pain; pulv. Doveri gr. viiss at night, if he did not sleep; and to have moderate diet for the next twenty-four hours.

Sept. 21. But little change. Quiniæ sulph. gr. iiss in solution was substituted for the pills.

On the third day of admission the thigh began to swell, the pain continuing, and the fever to assume a low form, with dry tongue, accelerated pulse, looseness of bowels, prone to diarrhœa, and considerable nervous prostration. The quinia was continued, with the addition of 30 drops of spt. æther. nit., every second dose, tinct. krameria ʒj in mist. creta ℥ss after each stool. Fomentations of hot water to be applied to the thigh, and beef-tea and wine-whey, one ounce each, to be administered alternately every hour.

27*th*. Eighth day of admission the general symptoms had somewhat subsided—the pulse was down to 90, from a variation of from 110 to 120; respiration 20 to 25, from 30 to 35; bowels more easily controlled; tongue moister; but the thigh was largely tumefied, and very painful—an abscess forming between the two cicatrices posteriorly. The quinia, chalk mixture, and krameria were continued, with a substitution of whiskey for the whey, about a half an ounce, every hour; beef-tea, eggs, and nourishing diet to be continued; and a large flaxseed poultice to envelop the entire circumference of the thigh, to be repeated as soon as it became cold.

Oct. 1. Up to this date the thigh continued to swell gradually day by day, accompanied by a sharp, throbbing pain, the abscess pointing at two places, externally near the former orifice of entrance and at point of exit of ball. His eyes had a sombre hue, some hectic flush on both cheeks, pulse 110, respiration 45, tongue dry and some sordes about teeth and gums, bowels loose; made a deep incision through the eschar marking the point of exit of the ball—this being the most dependent part—from which issued in a full stream about two pints of highly-offensive, dark, grayish, ichorous matter. I examined the wound thoroughly, but could discover no foreign substance. I ordered the parts to be well cleaned, to be washed with dilute solution of chlor. soda, and powdered charcoal to be sprinkled over the poultices—which were to be continued—the other remedies, the krameria in mucilage acacia, and the diet and stimulants to be given as before.

2d. Said he felt much better; had a better and quieter night. Tongue still furred but moister, pulse quick and feeble, respiration hurried, bowels better, and skin in good condition. Abscess still discharged the same offensive, thin, dark, ichorous matter, like that from some forms of gangrene. Quinia gr. iiss, in solution with ammon. carb. gr. v in emulsion, to be given every alternate two hours; whiskey and beef-tea as before. Every hour abscess to be injected with solution permanganate of potas. and poultice continued.

3d. Very feeble and pale. Quite delirious during the night, had two stools, and was troubled some with nausea—pulse quick and sharp, breathing hurried, condition of patient much worse. Ordered one ounce beef-tea and two ounces milk punch, alternately each half hour, and of tinct. ferri chlor. ℥j et quinia sulph. ʒss, 25 drops every 4 hours—charcoal poultices to be continued to the thigh. 3 P. M. Pupils contracted; in a comatose condition, from which he could scarcely be aroused; did not answer questions; pulse 112, sharp and small; respiration difficult; bowels moved involuntarily; very sensitive to touch; cried out and struck at random if his thigh was at all manipulated; thigh largely infiltrated down to the knee, which was red, but little discharge from abscess; discharge still thin, gangrenous, and bad smelling; refused everything offered him; took no medicine, stimulants, or diet—spit it out madly, though seemingly semi-unconscious. Acid. tannic. and quinia injection to control bowels. 7½ P. M. Sinking rapidly, lids half closed, pupils contracted and insensible to bright light held close to the eyes, considerable dyspnœa.

4th. Continued to fail through the night, and died quietly at 5½ A. M. No post-mortem examination was had.

It has always been a query with me whether this was a case of pyæmia from absorption of poisonous matter, the abscess from which it originated being contiguous to the larger absorbents and favouring such a result, or a case of localized typhoid fever, if I may be allowed such an expression, the conditions peculiar to which, falling with unequal force upon this weak point. Certainly the exhausting discharges, with the depressed condition of the patient, had much to do towards bringing about the fatal result.

Wound of Loins by a Shell, with Fracture of Spinous Process of Second and Third Lumbar Vertebræ; Recovery. By Philip S. Wales, M. D., Surg. U. S. N.

J. F. Otas, 28, born in New York, admitted into the Naval Hospital at Pilot Town, August 8th, with a severe shell wound of loins. He was standing near his gun while passing the enemy's batteries in a gun-boat, with his cartridge-box and pistol fastened around him with a strong broad belt. A rifle shell struck these obliquely, carrying them away, as well as a portion of the integuments and muscles in the lumbar region the size of his two hands. The shock was severe, and the pain excruciating. He vomited freely, and could only lay upon the bed prone. The spinous processes of the second, third, and fourth lumbar vertebræ were fractured through their laminæ; were denuded and freely movable. There was no paralysis, but a slight sluggishness in the movements of the lower extremities. The bladder was paralyzed, and required the urine to be drawn off; the bedclothes were kept damp by this fluid dribbling away during the night. Water dressings were applied until all inflammatory action was controlled, then simple dressings were resorted to, under which treatment the wound cicatrized and the spinous processes became consolidated in seven or eight weeks.

I saw the patient a year afterwards, and then he was inconvenienced by dribbling of urine, but was gradually improving; his general health was better. The functions of the muscles of the legs were also being gradually re-established.

Puerperal Convulsions treated by Bromide of Potassium. By CHAS. C. SHOYER, M. D., of Leavenworth, Kansas.

Mrs. H., aged 18, primipara, consulted me, April 30th, for a severe pain in what I first mistook for the fundus of the uterus, and supposed labour had set in: I could not reach the os uteri, and promised to call again in three hours; on my return she still complained of pain at the same place, and that it was more violent; I now questioned her more closely, and finding, the os still out of reach, diagnosticated gastric pain, and ordered: R.—Sp. lavand. co. ℥j, morphia sul. gr. j.—M. S.—Teaspoonful hourly till relieved; two doses quelled the pain. In the night she vomited and had two stools from a half ounce ol. ricini; she also had a morbidly craving appetite, and ate largely of meat, bread, etc., all night long, and on the morning of the 1st of May, at 7 A. M., got up for the purpose of again eating, and fell to the floor fainting; upon being placed in bed she had a series of violent convulsions. I reached her at 8 A. M. and found her strongly convulsed; breathing stertorously; pupils insensible to light; teeth firmly fixed, and frothing at the mouth. I at once administered ol. tiglii two drops, and gave in all five drops in an hour; it had no effect whatever. Chloroform being now at hand I caused her to inhale it, which at once stopped the convulsions, but upon withdrawing it convulsions recurred. Having ascertained the death of the child, by auscultation and palpation, I punctured the membranes, through a speculum, with an ordinary pocket probe, fastened in a common spring forceps. In a short time she commenced vomiting, which was assisted by emetics; throwing up large quantities of pieces of meat, bread, etc., showing the food to have been swallowed without being masticated. She became quiet for a short time only, and I then administered the following dose: R.—Hyd. chlor. mit. gr. xv, podophyllin gr. j, to be followed in three hours by magnes. sulph. ℥ss. This occasioned three large passages, which were voided into the bed, the patient being unconscious. I may here say, that these medicines were given at such times as we could get her to swallow. Cold was applied to the head, and sinapisms to the extremities. Dr. Carpenter now met me in consultation. After the operation of the cathartic there was a cessation of the convulsions for nearly three hours, but the pains of labour setting in at about 5 P. M., she again became convulsed, and had several in rapid succession. We had thus far emptied the stomach and bowels, ruptured the membranes, and administered chloroform, and all without avail. The chloroform acted well so long as it was inhaled, but as we could not obtain a trustworthy person to administer it in our absence, we determined to give bromide of potassium in fifteen grain doses hourly, and be governed by its effects; we reasoned from its effects in epilepsy and other nervous affections. From the time of its first administration to the termination of parturition, a period of 21½ hours, she never had another convulsion, nor has she since. The bromide was given five hours in succession, or about seventy-five grains; allowing some to have been wasted, she got fully ʒj. Being now quiet and somnolent (the stertor having ceased), the intervals were lengthened, and it was only given to allay restlessness. On the morning of the 2d, I found she could be aroused; pulse 85; sensible to the pain of labour which was now advancing slowly; would answer questions in monosyllables, but evidently did not like to be disturbed; os dilating; there was considerable anæsthesia. Bromide was now given every four hours and discontinued at 12½ P. M.; child was born at 2½ P. M. It was eighteen inches long, and the epidermis was peeling; should judge it to have been 8½ months old; placenta came away and uterus contracted as in a natural labour. She took in all ʒijss bromide of potassium from 5 P. M. May 1st, to 12½ P. M. May 2d, a period of nineteen and a half hours. She remained soporose until the morning of the 3d, and then awakened as from a prolonged sleep, and remembered nothing of the past, not even that she had had a child. I could obtain none of her urine until thirty hours after her confinement; it contained no albumen, but she complained of vertigo and other cerebral symptoms, with œdema of feet and legs, before sending for me. This is, so far as I know, the *first* case of puerperal convulsions treated by the bromide of potassium, and I ask for it a more extended trial; should such another case present itself, I would not induce premature labour, but exhibit the remedy at once.

Citric Acid in Metritis. By CHARLES W. OLESON, M.D., of Bloomingdale, Ill.

Mrs. M. K., primipara, was delivered, May 2d, after a slow but unassisted labour, of a healthy male child.

Several days previous to her confinement, I had been summoned on account of severe lancinating pains, situated in right iliac region and extending into hip. These pains were speedily relieved by a few doses of the compound ipecac. powders. After the accouchement, beyond slight strangury, which was relieved by the application of cloths wrung out of warm water to the vulva, she did well until the evening of the fifth day, when the pain reappeared, but of a more severe nature and extending over the entire hypogastrium. The tongue soon became covered with a white, pasty coat, the pulse ranged from 120 to 130, the lochia was suppressed, the stools were frequent and thin, the appetite lost, the womb became exquisitely tender when touched, and the patient tossed in bed vainly seeking by change of position to relieve her distress. I ordered a warm epithem of hops and camphor, to be renewed every two hours, and gave half a teaspoonful of castor oil. The cathartic expelled some hardened feces, after which the discharges became less frequent and of better consistency. I also gave two drops of fluid ext. of verat. viride every three hours, and to procure rest and relieve pain half a grain of sulph. morph. and 6 grains of bromide potassium every two hours. Nevertheless the pain continued, with but short intervals of rest, for two days, and the patient had by this time become exhausted, and there was yet no apparent prospect of a cessation of the pain. At this juncture, I concluded to make a trial of citric acid, in regard to the efficacy of which to relieve pain I had previously satisfied myself in a patient with scirrhus of the left mamma. I gave ℞.—Acid. citric. ʒij; Aqua, ℥iv.—M. Sig.—Teaspoonful every two hours. At my next visit, I was informed that relief followed the first dose, and that, save some slight twinges, no pain had since been felt The fever ceased, the tongue speedily became clean, the appetite and lochia returned, and, what was most gratifying, there was no return of the pain, though the womb remained tender for several days. With tr. ferri chlor. and quinia as a tonic and the substitution of fresh lemons as more palatable than the mixture, the patient rapidly convalesced, and is now engaged in her household duties. Since then, I have used the acid in severe after-pains, and have been highly pleased with the prompt alleviation of distress that it affords.

A Case of Voluntary Self-Emasculation. Reported by D. N. RANKIN, M.D., Physician to Western Penitentiary of Pennsylvania.

W. J. D., aged 23 years, a prisoner in the Western Penitentiary of Pennsylvania, deserted from the rebel army in January, 1863, in West Virginia, and afterwards enlisted in the United States army, remaining there until May of the same year, when he deserted from it also, and made his way to Columbus, Ohio. Soon afterwards he passed over into Pennsylvania, and wandered about, through the mountainous regions of that State, until he incidentally met with a suitable accomplice, who was equally depraved in character, and as willing to undertake anything ever so reckless and criminal, providing it would lead to the acquisition of money. They arrived at Pittsburg on the 3d of December, 1863, and, on the next night, broke into and robbed the post office at West Brownsville, Pa., a village in the neighbourhood of Pittsburg, in which act he was captured, but his companion in guilt, unfortunately for the community, escaped. He was tried, convicted, and sentenced to hard labour and solitary confinement in the Western Penitentiary for the term of ten years.

During the early part of his confinement, he seemed to endure his punishment as well as the generality of the prisoners do, until May 6th, 1866, at which period I received an urgent summons to hasten to the prison to see a man who had attempted to commit suicide. On my arrival I found that, by means of the knife with which he had been in the habit of cutting his meat and bread, Davids had, after sharpening it on the stone floor, deliberately removed both his testicles.

When asked what motive had induced him to such a barbarous act, he said that for some considerable time he had been terribly tormented, during his sleeping hours, with such annoying, lascivious dreams, that at length they had become insupportable, and supposing the testicles were the cause of all this trouble, he had determined to rid himself of the offending organs. After having thus made up his mind, he fixed upon the approaching Sunday for carrying into effect his resolution. When the time arrived, and he had made the proper preparation for the operation, by sharpening his knife, he commenced by making one cut that penetrated merely through the integuments of the scrotum, when, his courage failing, he postponed the operation to the next Sunday, but on this day his fortitude was insufficient to enable him to do any better than on the first attempt, when he determined to defer the farther prosecution of the operation to the next Sunday. When that day arrived, he determined that on that day he would succeed in his object, if it should cost him his life. So, on Sunday afternoon, May 6, 1866, after the necessary preparations, he made a sweeping incision, antero-posteriorly, parallel with the raphé of the scrotum, and immediately over the right testicle, extending about two and a half inches in length, and completely exposing that organ to view, then, after drawing it down a little distance, he severed the spermatic cord, thus detaching the testicle entirely, which he carried to the water-closet, ten feet distant, and threw it into that receptacle. After the cutting of the cord, there was considerable hemorrhage from the spermatic artery, to check which he obtained a thread by ripping a seam in one of the legs of his pantaloons, with which he successfully ligated the bleeding artery, and then used cold water to check the venous hemorrhage.

Having thus succeeded so well in the removal of the right, he at once engaged in extirpating the left testicle, and as equally well succeeded in removing it also.

On my arrival at his cell, he presented a most pitiable appearance, and at once addressed me, by observing, "Well, doctor, I have done it;" and, throwing off the blanket with which he was covered, he exhibited to view the whole extent of the inhuman act. There were two incisions in the scrotum parallel to each other, antero-posteriorly, about two and a half inches in length, as neatly made as if done by the most expert surgeon.

The bloody knife and the blanket, saturated with blood, were the only objects more than ordinary observable around his cell.

I carefully washed the wounds, and, having brought the ends of the ligatures out at the lower part of the incisions, brought together their edges, with three sutures to each incision, and supported them with a sufficient number of adhesive straps, taking care to leave the inferior ends of the incisions a little open for the escape of the discharges. The parts were then supported by a compress and T bandage. As a dressing nothing but cold water was used.

On the eighth day the sutures were removed, and in about three weeks after the performance of the operation he was able to perform his allotted task as a shoemaker in the prison.

This man, previous to his imprisonment, had been a desperate character, and had spent the greater part of nine years of his time, before the war commenced, in roving about through Texas, Mexico, and Arkansas. He is extremely ignorant, unable to read or write, and may be considered a perfect specimen of a Mexican bandit.

At the present time, January, 1867, he is in excellent health, with the exception that he is considerably troubled with obesity; but says he is now much better contented than formerly to remain within the walls of his solitary cell, where he sees no person except the officers of the prison.

Excision of Fibro-malignant Tumour from Right Side of Neck. By J. F. Shaffner, M.D., Salem, N. C.

In October, 1865, Mr. B., æt. 60, consulted me in reference to a large tumour, extending from behind the right ear downwards towards the clavicle, which had made its appearance some fifty years before. When first observed, it was about the size of a pea, and had been gradually increasing ever since, and always free from pain. It was pronounced to be fibrous, and not probable to result in anything more serious than inconvenience from bulk and compression of adjacent parts.

During the preceding summer, the surface became inflamed, speedily followed by ulceration and sharp, lancinating pain, and the general health began to fail. This was his condition when he first consulted me. After reflection, I became convinced that excision presented the only remedy.

Three months later, he again called. During the interval ulceration had made rapid progress, the mass had become gangrenous, and exceedingly offensive. The general health had suffered correspondingly, and it was plain that the patient must have speedy relief or sink from exhaustion.

Excision was again suggested, with a candid statement of the great danger which would attend it.

On Friday, 23d February, 1866, the patient presented himself for operation. Assisted by Dr. Theod. Kechler, of this place, the patient was placed under the influence of chloroform and the operation commenced. In order to command the whole tumour, free elliptical incisions were made; the first from lobule of the ear to the clavicle, with a second extending from behind the ear to the lower end of the first. The cutaneous flaps were reverted over the tumour, while the ear, by its lobule, was drawn strongly upwards and backwards by an assistant to avoid injury during the subsequent steps of the operation. Its cellular connections were detached with the handle of scapel, to obviate injury, as far as possible, to important bloodvessels and nerves. The external jugular vein passed directly through the mass, and after ligation was divided. The hemorrhage resulting from the division of the numerous enlarged bloodvessels required the application of upwards of twenty ligatures, which occupied much time. Fortunately, there was neither involvement of parotid gland nor carotid artery. The sheath inclosing the latter was detected immediately behind the tumour. Compression upon the submaxillary gland had induced marked hypertrophy, yet it was soft, and apparently free from involvement. The whole mass being detached, measured, in its long and short diameters, seven by five inches, and weighed two and a half pounds.

Consciousness having returned, the patient was placed in bed and a full anodyne administered. In a few days healthy suppuration was established, the ligatures separated in due time, and the wound closed by granulation.

Three weeks after the operation, Mr. B. returned home, to all appearances well. A farmer by occupation, he laboured hard during the spring and summer, and frequently declared that he "never felt better in his life." Six months after the operation, he died from an affection of the liver, which his attending physician pronounced carcinoma.

The tumour, now before me, preserved in alcohol, presents all the characters of a fibrous tumour. Its shape is globular—the surface is nodulated—its structure dense and inelastic. A degeneration into the malignant, evidently induced the ulceration, the fetor, the pain, and urgent constitutional disturbance, and, still more, the final hepatic involvement.

Report of a Case of Vesico-Vaginal Fistula. By CLARKSON FREEMAN, Esq., M.D., of Milton, Canada West. (Before the Halton Medical Association, January 22d, 1867.)

The following successful case of operation for vesico-vaginal fistula occurred in my practice last summer (1866). The history of the case, as related by the patient, is as follows:—

Mrs. J. McL., æt. 27, was taken ill on the 29th of July (1864) with severe labour-pains in her fourth confinement, which continued the whole day until 8 o'clock A.M. of the 30th, when the waters broke and came away in large quantity, after which the pains subsided until about noon the 1st of August, when severe bearing-down pains, without a moment's intermission, occurred, and from that time was unable to urinate, although having the most intense inclination to do so. At 2 o'clock P.M. on the 2d, the medical attendants stated, after they had in vain attempted to introduce a catheter, that there was a bag of waters on the head of the child, which it was necessary to open in order to allow the child to be born. Assent being given, they made a puncture with a pair of scissors, from whence flowed a pot full of bloody water, which immediately relieved the wish to urinate. The urine came away incessantly scalding, so that the suffering was almost beyond endurance. She was unable to leave her bed for more than three months after confinement.

On Examination.—There was found a circular opening four lines in front of the anterior lip of the os uteri, which permitted the introduction of the largest sized catheter into the bladder, there was also a harder cicatrix extending from it towards the bladder.

Treatment.—For a few months I used caustic applications and cold astringent injections without success. On the 9th of May, with the kind assistance of several of my medical brethren, I pared the edges of the fistula and passed two silver and four annealed wire sutures through it and continued the use of the catheter in the bladder, which appeared to do well until about three weeks, when she observed the urine escaping again per vaginam. I then ascertained that the opening had been reduced more than one half. I then again pared the edges and brought them together by four annealed wire sutures and applied a pair of long delicate bullet forceps to retain the vivified portion of the fistula in perfect apposition, which had a most happy effect in producing partial prolapsus and thus very materially facilitating the introduction of two more stitches, which were necessary in consequence of the others being disengaged too soon. These two remained ten days—about the same time as the first—with a successful result. I would recommend the annealed wire from its easy application and less liability to break, than the silver.

Extirpation of Nail of Thumb under Anæsthesia by Cold. By John Parsons, M.D., of Mount Pleasant, Kansas.

Local anæsthesia, as is well known, can be produced by snow or ice and salt, and minor operations performed, without pain, as in the following case of onychia.

Mrs. B., who had been treated by charlatans with salves, &c., for the past four months without any benefit, lately applied for treatment, and I decided to remove the partly detached nail of the right thumb. As she dreaded the pain of the operation, and also taking chloroform and ether, I concluded to try *freezing* with snow and salt. In two minutes, the thumb being insensible to pain, I quickly extirpated the nail. The thumb was then thawed in water and then simply dressed. Seven days after the operation, it was healing rapidly, and a new nail had appeared.

Anencephalic Monster.—By A. A. Moore, M. D., Camden, S. C.

I was summoned, April 10th, 1866, at 11 o'clock at night, to a coloured woman, aged 25 years, in her second labour, the first had been natural. The patient thought she had had labour pains since the morning of the 8th inst. Her breathing was short, pulse feeble and frequent, pain almost incessant at the fundus of the uterus, the membranes very much *distended*, and the *os uteri* pretty well *dilated*. Waited until about 3 o'clock next morning, when there being no further progress in the labour, and the *os* being *fully dilated*, I ruptured the amniotic sac after a little manipulation. A very copious flow of water followed, after which I found the *left ear* of the child at the *symphysis pubis*, and the *right ear* of course towards the *sacrum*. The child was born in a few minutes, the head being delivered in the above position, and *without rotation*.

The child (a female) was an *Anencephalus*. The whole of the occipital bone except the basilar process, the whole of both parietal bones, and the frontal bone down to the superciliary ridges were *absent*. The mastoid portions of both temporal bones were *present*. The eyebrows, eyes, nose, mouth, chin, and both ears were *perfectly formed*. The child was healthy looking, and fully formed in every respect with the exception of the *imperfect ossification of its cranium*, and the *absence of any discoverable vestige of a brain*.

Malformation of the Genital Organs.—Reported by T. H. BARTON, M. D., of Syracuse, Ohio.

On the 7th of September, 1864, I was called to see a child, which presented the following deformities. The penis was cleft at about its middle part. The largest cleft was perforate so as to admit a common sized probe about one inch; the smaller one was imperforate, and both completely denuded of integument. The scrotum appeared like two fleshy excrescences without integument. I could not find any testicles. Immediately below the fleshy excrescence of the scrotum was a well-developed labia majora, which ended in a complete cul-de-sac. Without any appearance of a vagina.

The anal orifice was completely covered over with natural integument, as was also the labia majora. Immediately below the umbilicus was a space about three or four inches in diameter denuded of integument. A hernia was also protruding covered with the peritoneum and abdominal muscles. In the right inguinal region there was a space about three inches in diameter denuded of integument, with the appearance of a large inguinal hernia. The urine was evacuated through an orifice in the right inguinal region. In other respects the child seemed to be healthy. I think it died seven or eight days from birth. There was no autopsy.

DOMESTIC SUMMARY.

Relation of Heat to Mental Work.—Dr. J. S. LOMBARD, Assistant Professor of Physics in Harvard University, has published (*New York Medical Journal*, June, 1867) some curious and interesting experiments on this subject. The experiments were all made upon himself.

"The object of the first series of investigations was to study the temperature of the head, while sitting quietly by himself, with no special mental occupation.

"Under these circumstances, it was found that while the temperature of the head was in some instances quite steady, in others it was very variable, rising and falling, often with great rapidity. The variations were slight, not amounting, as a rule, to more than a hundredth of a degree of Centigrade; but still they were very marked, if some other portion of the body was taken as a standard of comparison; thus the temperature of the leg or arm varied, if at all, within much narrower limits.

"What the exact cause of these irregularities was, could not be determined with certainty; but the conclusion arrived at from a great many observations was, that this variability of temperature was connected with certain conditions of the mind. It was found that, in those cases in which the temperature was steady, the mind was, as a rule, in a more or less torpid state, such as persons are apt to fall into after a hearty meal; while in the cases in which variability of temperature existed, the mental condition was one of much greater activity. The effect of a transition from the former to the latter condition was frequently shown, under the following circumstances:—

"It often happened, when the mind was in the state of inactivity mentioned, that one or more persons would enter the room in which the observer was seated, and a short conversation ensue. The subjects of conversation were of no particular interest, and required no reflection; but nevertheless, in a few moments the temperature, which had previously been steady, would begin to vary, rising and falling, but with a general upward tendency.

"This change was not due to the muscular exertion of talking, for it manifested itself when the observer took no part in the conversation; merely listening to the words of others, and saying nothing himself. Nor was it owing to any effect produced upon the circulation by modification of the action of the heart, for in this case other portions of the body would have been influenced likewise, whereas it was found that the head alone was affected, other parts situated full as favourably, if not more so, for feeling any such influence, exhibiting little or no change of temperature. Whatever the cause was, it certainly appeared to have its seat in the head.[1]

"Pursuing these experiments farther, it was found that *anything that aroused the attention* was capable of causing a greater or less rise of temperature on the part of the head, over and above that of the rest of the body. Various sights and sounds had this effect; and, indeed, it could be produced in a great variety of ways.

"In the next place, the effect of the exercise of the higher reasoning powers was investigated. The results of these experiments were as follows:—

"*First.* Mental action of this sort caused a rise of temperature on the part of the head, which varied very much in different cases; the highest rise noticed did not exceed the twentieth of a degree.[2]

"*Second.* The temperature of the extremities fell, sometimes only slightly, but at other times very decidedly—a half or a quarter of a degree of Centigrade, for example. This fall was doubtless owing, in part, to the absence of muscular exertion consequent upon sitting still; but not entirely so, for mere immobility, without mental exertion, did not produce an equally great effect.

"A large number of observations were also made upon the effect of the reading of different literary productions. Provided the work did not particularly excite the interest or arouse the emotions of the reader, either no effect at all was produced, or else the temperature was slightly depressed. But with productions of an opposite description a very different result was obtained. In these cases the temperature was very speedily and visibly elevated.

"The most striking effects of all were produced by the reading aloud, or the recitation of poetry. The rise of temperature in this case was not due in any appreciable degree to the muscular exertion involved, for mere mechanical recitation produced no effect; but the moment the interest of the speaker began to be awakened, the temperature rose.

"Although the action of the heart was frequently more or less modified, yet this could not account for the rise of temperature, inasmuch as other parts of the body ought, in such a case, to have shared equally in the rise, whereas it was the head that was chiefly, if not solely, affected. Reading or reciting to one's self gave similar results, and often even in a more marked degree.[1]

---

[1] It is almost needless to say that, in all these experiments, changes of position, or any other disturbing cause, were carefully avoided.

[2] With delicate thermo-electric apparatus it is impossible to estimate accurately the thermometric values of the variations observed; the most that can be done is to make an approximation.

"The rise of temperature in this series of experiments was the highest noticed in all the observations given in this article; a few minutes' recitation producing a greater effect than several hours of deep thought.

"In conclusion, I would say that, as regards the particular regions of the head in which the elevation of temperature was most marked, it was generally found that the best results were obtained just above the occipital protuberance. This statement applies to all the experiments that have been related. In the last-mentioned series of observations it was not unfrequently found that the temperature of the forehead *fell*, while that of the back of the head *rose*; but for what reason I have not yet been able to determine."

Two Attacks of Measles within Six Weeks in the same Patient.—Dr. MINOT reported to the Boston Society for Medical Improvement the following case of this: A little boy, three years old, sickened December 21st. An eruption, supposed to be that of measles, appeared on the 25th. The diagnosis was, however, at first a little doubtful, as the eruption was complicated by urticaria for two days. After this time it had a perfectly normal appearance; moreover, the child had the catarrh, and other general symptoms of measles. A companion who saw him early in the disease, was attacked with measles exactly a fortnight afterwards. A sister of the first patient, four years old, and a young lady visiting in the family, also caught the disease, at intervals of a few weeks, the symptoms and appearances in each being perfectly characteristic. On Feb. 3d, after a few days' indisposition, the eruption reappeared on the first patient, and went through its course in the usual manner, being accompanied by the catarrh and other symptoms of measles. The interval between the two attacks was six weeks. Singularly enough, of the three individuals who caught the disease from this patient, two, the young lady and the little boy (her brother), had had the disease before.—*Boston Med. and Surg. Jl.*, May 9,1867.

Ear Douche.—Dr. EDW. H. CLARKE describes (*Boston Med. and Surg. Journ.*, May 30, 1867) an instrument for cleansing the ear, which he thinks preferable to the syringe. "It consists of a glass jar, of the capacity of about a pint, and of a flexible tube three feet long. One end of the tube is attached to the jar, and the other end is furnished with a nozzle appropriate for the ear. By elevating the jar to a greater or less height, a continued stream of water is poured into the meatus with sufficient force to cleanse it thoroughly, and to do so without pain to the patient. I have used this instrument for the purpose of cleansing the ear in a large number of cases, and am satisfied with its action."

An instrument, acting on the same principle, has been used for some years for administering injections per rectum.

Deep Cervical Tumour, the removal of which involved the exsection of a portion of the internal Jugular Vein.—Dr. W. W. GREENE, Prof. Surgery in Barkshire Med. College, relates (*The Medical Record*, June 15, 1867) a case of this. The tumour was about the size of a croquet ball, on the left side of the neck, and the seat of almost constant pain. The internal jugular vein was found so firmly adherent to the sac that in the careful attempts to liberate it with the finger and handle of the scalpel, the vessel ruptured and there was an alarming gush of venous blood. A ligature was at once applied to the cardiac side, and the hemorrhage from the other being controlled by pressure, the vein was then carefully isolated, a portion two and a half inches excised, and a ligature applied to the distal side.

---

[1] The success of these experiments must depend, in a great measure, upon individual peculiarity; and with many persons they would doubtless fail. *Real emotion* must be awakened to produce the rise of temperature. Where this condition of the mind existed, out of more than a hundred observations, I have never known a failure.

Dr. G. states that he was taught to believe that the ligation of veins was a hazardous procedure, but he has not found it to be so. He has now ligated the internal jugular vein four times, the femoral vein six times, and other veins several times, without the results he had been taught to fear.

This statement tends to sustain the results, so far as the experience of a single individual can do so, the conclusions arrived at by Dr. S. W. Gross, from his extended and laborious researches, published in the numbers of this Journal for January and April last. As Dr. G. does not seem to be acquainted with that exhaustive paper, we would take the liberty of recommending it to his attention.

Median Lithotomy.—Dr. Thomas M. Markoe, Surgeon to New York Hospital, strongly commends (*New York Med. Jour.*, April, 1867) the Median, or "Allerton's operation" for stone; and says, that from a trial of it in twelve cases, he is its warm advocate. He reports, in addition to his own twelve cases, eleven contributed by his friends in which the operation was successfully performed.

Anterior Dislocation of the Elbow-Joint without Fracture of Olecranon successfully reduced.—A case of this rare dislocation is related (*Chicago Medical Journal*, June, 1867) by Dr. R. P. Hunt. The subject of this case was Lieut.-Col. Henry Clay, Jr. The unfractured olecranon and the depression in the rear of the humerus were distinctly felt. There was no fracture of the olecranon. Dr. H. tried to reduce this dislocation by direct traction, without avail; then he flexed the forearm upon the arm, changed the extension to near the elbow-joint, repeated the traction, and suddenly, at the proper time, stopped the traction, by extending the forearm, the luxation was reduced. A roller bandage, and a dose of morphia to procure ease and sleep, were all that was done. Col. Clay was about in a few days, gradually improving the use of his elbow from time to time. He was killed in battle at Buena Vista, gallantly fighting under the flag he had sworn to defend."

Abscess in the Appendix Vermiformis; Incision; Recovery.—A case of this, in a girl 15 years of age, is reported by Dr. J. H. B. Burge. Prof. W. Parker, being called in consultation, advised incision. Accordingly, the patient having been put under the influence of chloroform by Dr. B., Prof. P. made an incision "three inches in length, directly over the tumour, its central portion extending through the muscles and the fasciæ transversales. An exploring needle was thrust into the tumour, and at first there seemed to threaten a pretty copious hemorrhage. It proved, however, to be mainly serum, and pus immediately followed. The wound was enlarged, a piece of lint introduced, and slippery-elm poultice applied. After consciousness returned, sol. morph. (Magendie's) gtt. x was given. Patient slept quietly for more than two-thirds of the time for the next thirty-six hours, generally two or three hours at a time. Has not cared for food since first attacked. Takes a little milk-punch, toast, and crackers.

"*March* 22. Pulse, since operation, very uniformly 100; to-day, 112. Skin and tongue moist; no pain, no thirst. Has taken no medicine since the day of the operation. Abscess continues to discharge moderately, and incision looks healthy."

The report, April 10, is: "Bowels quite regular; wound nearly healed; appetite good; patient gaining strength rapidly."

Ligature of the Subclavian Artery.—Prof. Willard Parker reports (*Medical Record*, May 1, 1867) five cases of ligature of subclavian artery, for axillary and subclavian aneurism. Of these, three were successful and two terminated fatally.

Spondylisthesis causing Difficult Labour.—Dr. James Blake, Professor of Midwifery in Toland Medical College, San Francisco, relates (*Pacific Medical and Surgical Journal*, Feb. 1867) the following interesting case of this:—

Mrs. H., æt. 26, always enjoyed good health, and now healthy, with no external signs of deformity; the spine, however, shows a deep depression opposite the lower lumbar vertebræ, most marked at the fifth. Married at the age of fifteen, and has had six children, and one abortion at four months. Is now advanced to the seventh month of the eighth pregnancy. The two first children were born alive after tedious labours, but the four last have been stillborn on account of difficult labours. She states that when she was married her weight was 101 pounds, but during her first pregnancy she gained rapidly in weight, weighing 199 pounds at the birth of her first child. She now weighs 220 pounds, and is apparently in perfect health, and active. Dr. B. attended her in labour, in consultation, about a twelvemonth ago, and then, owing to the extreme difficulty we had in delivering her, on account of the distortion of the brim of the pelvis, it was determined, should pregnancy again occur, to bring on labour at the seventh month, as affording the only chance for a living child being born. The deformity was caused by the displacement forwards and downwards of the last lumbar vertebra which overhangs the promontory of the sacrum, contracting the antero-posterior diameter of the inlet to about three and a half inches, and considerably altering the direction of its axis. The true pelvis was normal and capacious.

"*June* 7. A small-sized Barnes dilator was introduced into the uterus and distended, the mouth of the uterus being soft and dilatable. On account of the great depth of the orifice of the uterus, owing to large development of the vulva, and the inclination forwards of the body of the uterus, the dilator had to be introduced through a long Fergusson's speculum. It remained in all night, and on taking it out in the morning, the orifice of the uterus was found dilated and discharging an abundant secretion of mucus. It was found impracticable to introduce a larger dilator through the speculum, so an elastic catheter was passed about six inches into the cavity of the uterus, and ten ounces of warm water were slowly injected. The patient slept well that night, and the next day, about twenty-four hours after the injection, labour pains set in at 6 P. M. I was called at 10.30 P. M.; found the mouth of the uterus well dilated, a pouch of membrane filling the vagina; no presentation could be made out. The pains were strong and regular. The membranes did not break until 12 M., and not until the pouch had passed through the vulva, a shoulder was found, presenting the back of the fœtus to the abdomen of the mother. The feet were brought down, and the trunk was expelled by the natural efforts. There was great difficulty in delivering the head, as the deformity had evidently increased since the last labour, there being barely three inches between the projecting vertebra and the symphysis pubis, and it was not until nearly an hour after the trunk was born that the head could be extracted. The fœtus was stillborn, it was very large, weighing nearly six pounds.

"The patient made a most favourable recovery, being out of bed on the sixth day, and down stairs in ten days. The most interesting point in this case is its etiology. The complete absence of any pain, or in fact of any symptoms of disease in the displaced vertebra, together with the perfect health of the woman, precludes, I think, our ascribing it to any of the causes that have been usually considered as producing the disease, such as scrofulosis, osteomalacia, rickets, inflammation and softening of the intervertebral cartilages, etc. I believe that in this instance the displacement was caused by the rapid increase in weight of the woman during her first pregnancy, the additional strain thus thrown on the ligaments uniting the lumbar vertebræ to the sacrum being more than they would stand, and the intervertebral cartilage being probably partially absorbed, the last lumbar vertebra glided forward, thus giving rise to the deformity. The constant childbearing undoubtedly favoured its continued increase. There is one practical remark that I would make on the treatment of such cases, and it is this, that delivery should be effected whilst the patient is lying on her side, as in this position we can exert traction more readily backwards, and therefore in a more favourable position to bring the head through the highly-inclined outlet."

THE JEFFERSON MEDICAL COLLEGE OF PHILADELPHIA.

The Forty-Third Winter Session of Lectures will commence on Monday, the 14th of October, with a General Introductory Lecture by Professor Gross. The regular lectures will begin the day after. The Session will terminate on the last day of February.

Charles D. Meigs, M. D., Emeritus Professor of Obstetrics and Diseases of Women and Children.

Institutes of Medicine, &c., . .	by Prof. Robley Dunglison, M. D. (Dean).
General, Descriptive, and Surgical Anatomy,	by Prof. Joseph Pancoast, M. D.
Institutes and Practice of Surgery, . .	" Samuel D. Gross, M. D.
Practice of Medicine, ...	" S. Henry Dickson, M. D.
Obstetrics and Diseases of Women and Children,	" Ellerslie Wallace, M. D.
Chemistry, ...	" B. Howard Rand, M. D.
Materia Medica and General Therapeutics, .	" John B. Biddle, M. D.

Lecturer on Clinical Medicine, . . .	J. M. DaCosta, M. D.
Adjunct Professor, and Demonstrator of Anatomy,	Wm. H. Pancoast, M. D.

To enlarge still more the already abundant opportunities for Clinical Instruction, a Clinic will be held daily at the College—the Surgical department being conducted by Professors Gross and Pancoast; that of the Diseases of Women and Children by Professor Wallace; and the General Medical Clinic by Dr. J. M. DaCosta. The lectures are so arranged as to permit the student to attend the Clinics of the Pennsylvania Hospital, and the Philadelphia Hospital.

FEES.—To each Member of the Faculty—as in all the schools of Philadelphia and New York—$20, ...	$140
Graduation fee, ...	30
Matriculation fee, ...	5

At a Public Commencement, held on the 9th of March, 1867, the Degree of Doctor of Medicine was conferred on the following gentlemen by the Hon. Edward King, LL. D., President of the Institution, after which a Valedictory Address to the Graduates was delivered by Prof. Biddle.

NAME.	STATE OR COUNTRY.	SUBJECT OF THESIS.
Achuff, J. Newton	Pennsylvania.	Diagnosis.
Adams, F. A.	Maryland.	Enteric Fever.
Aikin, Perley J.	Tennessee.	Differential Diagnosis between Typhus and Typhoid Fever.
Allison, Samuel C.	Pennsylvania.	Pneumonia.
Ansley, William Bailey	Pennsylvania.	Puerperal Fever.
Armstrong, John A.	Pennsylvania.	Pneumonia.
Baker, Charles A.	Pennsylvania.	Emetics.
Baker, John Wesley	Pennsylvania.	Abortion.
Barbour, Philip C. S.	Kentucky.	Opium.
Baskerville, Charles, jr.	Mississippi.	Chloroform—Magnum Dei Donum.
Beecher, Abraham C. W.	Pennsylvania.	Hemorrhoids.
Bender, O. C.	Kansas.	Encephaloid Cancer.

NAME.	STATE OR COUNTRY.	SUBJECT OF THESIS.
Berry, Frank K.	Tennessee.	Dermology.
Bliss, D. P.	Ohio.	Cerebro-spinal Meningitis.
Bollinger, Abraham D.	Pennsylvania.	Dysentery.
Boon, Jacob	Pennsylvania.	Hypodermic Injections.
Botsford, William	New Brunswick.	Strychnia.
Bower, Gibson W.	Pennsylvania.	Parturition.
Brower, William	Pennsylvania.	Ergota.
Brown, Joseph A. C.	Missouri.	Treatment of Typhoid Fever.
Buckley, George E.	Nova Scotia.	Acute Pericarditis.
Burton, John	Indiana.	Pneumonia.
Campbell, H. F.	Pennsylvania.	Landmarks of Medicine.
Carey, John F.	Delaware.	Intermittent Fever.
Carpenter, Paul D.	New York.	Instinct and Reason.
Carroll, Robert J.	Pennsylvania.	Pneumonia.
Cassaday, Felix F.	Pennsylvania.	Rheumatism.
Clark, Charles H.	Pennsylvania.	Rheumatism.
Coble, Daniel W.	Pennsylvania.	Pemphigus.
Coe, Ira E.	New York.	Acute Pneumonia.
Cowling, Richard O.	Kentucky.	Morbid Anatomy.
Crockett, Samuel J.	New York.	Secretion.
Cunningham, J. Guy	Pennsylvania.	Acute Dysentery.
Davis, Thomas E.	Pennsylvania.	Dyspepsia.
De Lap, Hugh	Tennessee.	Abortion.
Devereaux, Robert	Pennsylvania.	Scarlatina.
Dobyns, William P.	Kentucky.	Tetanus.
Dunn, Samuel R.	Mississippi.	Principles of Diagnosis.
Earle, Willard C.	Iowa.	The Duties of the Young Physician
Earnest, John G.	Tennessee.	Puberty.
Ebaugh, William C.	Pennsylvania.	Acute Dysentery.
Elliger, Richard A. F.	Pennsylvania.	General Diagnosis of Diseases.
Embry, Gideon A.	Kentucky.	Cynanche Maligna.
Enders, F. Henry	Kentucky.	Pathology of Scrofula.
Evans, Charles R.	Pennsylvania.	Physiology of the Voice.
Faust, Jonathan N.	Pennsylvania.	Air and its Relations to Life.
Fernsler, Edwin K.	Pennsylvania.	Dysentery.
Frank, Adam	Pennsylvania.	Dermatology.
Gold, Hiram	Pennsylvania.	Ox Gall.
Graham, James	Pennsylvania.	Hemorrhage.
Graham, John	Pennsylvania.	Cathartics.
Graham, John W.	Pennsylvania.	The Gravid Uterus.
Gruel, Theodore H. E.	Germany.	Laryngoscopy.
Hall, Albon Eugene (M.D.)	Ohio.	Dysmenorrhœa.
Hall, C. Lester	Missouri.	Epilepsy.
Hall, William E.	Pennsylvania.	Acute Pleurisy.
Harris, James Walton	Mississippi.	Lacryma.
Hays, M. P.	Pennsylvania.	Cerebro-spinal Meningitis.
Hearn, William Joseph	Delaware.	Primary Syphilis.
Henderson, John D. W.	Pennsylvania.	Amenorrhœa.
Hepburn, Charles W.	Pennsylvania.	Acute Rheumatism.

NAME.	STATE OR COUNTRY.	SUBJECT OF THESIS.
Heysinger, I. W.	Pennsylvania.	The Philosophy of Hygiene.
Higgins, Richard T. (M. D.)	Illinois.	Cardiac Hypertrophy.
Hill, Henry Howard	Maryland.	Pleurisy.
Hitchner, Charles F.	New Jersey.	Scarlatina.
Hollinsworth, William R.	North Carolina.	Diphtheria.
Holston, John G. F., jr.	Ohio.	The Physician and his Patient.
Howell, William Harrison	North Carolina.	Peritonitis.
Hunsberger, William E.	Pennsylvania.	Dropsy.
Hurt, P. L.	Missouri.	Puerperal Peritonitis.
Kennedy, David	Pennsylvania.	Asthma.
King, Charles P.	Ohio.	Science of Medicine *vs.* Empiricism.
King, Robert M.	Kentucky.	Bilious Remittent Fever.
Kline, Luther B.	Pennsylvania.	Erysipelas.
Knorr, John K., jr.	Pennsylvania.	Measles.
Kretzer, Aaron A.	Maryland.	Cholera Infantum.
LeBar, Amzi	Pennsylvania.	Hepatitis.
Lee, James M.	West Virginia.	Oil of Turpentine.
Lloyd, David Corey	Pennsylvania.	Hospital Gangrene.
Lowman, Webster B.	Pennsylvania.	Diphtheria.
Lowry, Silvanus Todd	Kentucky.	Diagnosis.
Lyle, James Nathaniel	Tennessee.	Typhoid Fever.
Martin, Zachary T.	Kentucky.	Variola.
Maxwell, James A.	Kentucky.	Inflammation.
May, Vance W.	Illinois.	The Blood.
McCaa, David J.	Pennsylvania.	Specific Iritis.
McDaniel, John R.	Arkansas.	Lithotomy.
McGinley, Jeremiah	Pennsylvania.	Inflammation.
McKean, William	Ohio.	Puerperal Convulsions.
McNary, Robert B.	Kentucky.	Modern Medicine.
Mears, Juan B.	Mexico.	Pericarditis.
Meloy, Albert Parke	Pennsylvania.	Periodicity.
Miller, Joseph W.	Pennsylvania.	Pain.
Mullen, Thomas J.	Pennsylvania.	Pneumonia.
Mullin, John H.	Pennsylvania.	Varicose Ulcers.
Murray, R. J.	Pennsylvania.	Medical Deontology.
Myler, William F.	Indiana.	Milk Sickness.
Newton, John Search	Pennsylvania.	Sodæ Sulphis.
Nichols, L. C.	Kentucky.	Variola.
Oatman, James J.	Pennsylvania.	Acute Dysentery.
Ogden, P. B.	West Virginia.	Dysmenorrhœa.
Orner, Charles T.	Pennsylvania.	Puerperal Peritonitis.
Orth, William M.	Indiana.	Hemorrhage from Wounds.
Otis, Ashbel R.	New York.	Mania à Potu.
Patzki, Julius H. A.	Pennsylvania.	Proctitis Eczematosa and Intertrigo of the Infant.
Phillips, Ellis	Pennsylvania.	Secondary Hemorrhage.
Porch, Albert	New Jersey.	Vaccinia.
Porter, William T.	Pennsylvania.	Typhoid Fever.
Purviance, George	Pennsylvania.	Dysentery.

NAME.	STATE OR COUNTRY.	SUBJECT OF THESIS.
Read, Frederick B.	Pennsylvania.	Women as Practitioners of Medicine.
Reber, John W. H.	Pennsylvania.	Constitutional Peculiarities of the Female.
Reeser, Howard S.	Pennsylvania.	Enteric Fever.
Renfro, C. J.	Kentucky.	Typhoid Fever.
Rex, Oliver P.	Alabama.	Ligature.
Richards, Milton S.	Pennsylvania.	Papaver Somniferum.
Rockefeller, Irvin M.	Pennsylvania.	Treatment of Gunshot Wounds.
Rollman, William	Pennsylvania.	Post Partum Hemorrhage.
Rosser, John C.	Texas.	Malaria.
Scales, Jefferson	North Carolina.	Hydrocele.
Schmalhausen, Henry	Illinois.	Medicine.
Schmoele, William, jr.	Pennsylvania.	Circulation of the Blood.
Scruggs, A. D.	Tennessee.	Rheumatic Fever.
Sims, Richard H.	Virginia.	Pneumonia.
Smith, J. R.	North Carolina.	Injurious Effects of Tight Lacing.
Smith, James I.	Delaware.	Intermittent Fever.
Smith, Robert B.	Nova Scotia.	Diphtheria.
Sterling, William D.	Illinois.	Typhoid Fever.
Stranahan, Chester W.	Pennsylvania.	Acute Pneumonia.
Thomas, Andrew J.	Mississippi.	Primary Syphilis.
Thompson, William R.	Pennsylvania.	Scarlatina.
Treacy, Denis J.	Delaware.	Traumatic Hemorrhage.
Tredick, John, jr.	New Hampshire.	Inflammatio Cervicis Uteri.
Trent, P. G.	Virginia.	Importance of Correct Diagnosis.
Wagoner, Daniel	Indiana.	Scarlet Fever.
Wallace, Barnett	Indiana.	Death.
Watts, John S. (M. D.)	Iowa.	Intermittent Fever.
Weaver, Charles W.	Pennsylvania.	Acute Dysentery.
Weaver, Joseph K.	Pennsylvania.	Diseases of the Vocal Cords.
Weiser, George B.	Pennsylvania.	Varicose Ulcers.
Whiteley, B.	Delaware.	Tetanus.
Whitten, Thomas J.	Illinois.	Intermittent Fever.
Williams, James	Tennessee.	Pneumonia.
Williamson, Charles W.	Delaware.	Remittent Fever.
Williard, George Parker	Ohio.	Arthritic Fever.
Wilson, John T.	Maryland.	Lymph.
Wilson, Thomas	Kentucky.	Fractures.
Wilson, Walter H.	Pennsylvania.	Scorbutus.
Winlock, Joseph T.	Kentucky.	Bilious Remittent Fever.
Wolff, M. L. (M. D.)	Pennsylvania.	Delirium Tremens.
Yost, John F.	Pennsylvania.	Acute Dysentery.

Of the above there are from—Pennsylvania, 70; Kentucky, 14; Tennessee, 7; Ohio, 6; Delaware, 6; Indiana, 5; Illinois, 5; North Carolina, 4; New York, 4; Mississippi, 4; Maryland, 4; Missouri, 3; New Jersey, 2; Virginia, 2; West Virginia, 2; Iowa, 2; Nova Scotia, 2; New Hampshire, 1; Texas, 1; Arkansas, 1; Alabama, 1; Kansas, 1; New Brunswick, 1; Germany, 1; Mexico, 1. Total, 150.

BELLEVUE HOSPITAL MEDICAL COLLEGE—CITY OF NEW YORK.

SESSIONS FOR 1867–68.

The Collegiate Year in this Institution embraces a Preliminary Autumnal Term, the Regular Winter Session, and a Summer Session.

The Preliminary Autumnal Term for 1867–68, will commence on Wednesday, September 18, 1867, and continue until the opening of the Regular Session. During this term, instruction, consisting of didactic lectures on special subjects and daily clinical lectures, will be given, as heretofore, exclusively by members of the Faculty. Students designing to attend the Regular Session are strongly recommended to attend during the Preliminary term, but attendance during the latter is not required.

The Regular Session will commence on Wednesday, October 16, and end about the 1st of March, 1868.

The Summer Session for 1868 will commence on the second Wednesday in March, and continue twelve weeks. This term will embrace courses of didactic lectures by the members of the Faculty of the Summer Session, together with clinical lectures at Bellevue Hospital, and the Charity Hospital, Blackwell's Island, and the daily recitations. Lectures will also be given by members of the College Faculty.

FACULTY OF THE COLLEGE.

ISAAC E. TAYLOR, M. D., Emeritus Professor of Obstetrics and Diseases of Women and Children, President.

James R. Wood, M. D., Professor of Operative Surgery and Surgical Pathology.
Frank H. Hamilton, M.D., Professor of Military Surgery, Fractures and Dislocations, and the Principles of Surgery.
Lewis A. Sayre, M. D., Professor of Orthopedic Surgery.
Alexander B. Mott, M. D., Professor of Surgical Anatomy.
W. H. Van Buren, M. D., Professor of Diseases of the Genito-Urinary System.
George T. Elliot, M. D., } Professors of Obstetrics and the Diseases of Women
Fordyce Barker, M. D., } and Children.
Benjamin W. McCready, M. D., Professor of Materia Medica and Therapeutics.
Stephen Smith, M. D., Professor of Descriptive and Comparative Anatomy.
Austin Flint, M. D., Professor of the Principles and Practice of Medicine.
R. Ogden Doremus, M. D., Professor of Chemistry and Toxicology.
Austin Flint, Jr., M. D., Professor of Physiology and Microscopy.
William A. Hammond, M. D., Professor of Diseases of the Mind and Nervous System.
N. R. Mosely, M. D., Demonstrator of Anatomy.
J. W. Southack, Jr., M. D., Assistant Demonstrator of Anatomy.

FACULTY OF THE SUMMER SESSION.

Henry D. Noyes, M. D., Professor of Ophthalmology, and Dean of the Summer Faculty.
J. Lewis Smith, M. D., Professor of Morbid Anatomy.
Foster Swift, M. D., Professor of Diseases of the Skin.
Prof. W. H. Van Buren, M. D., Lecturer on Diseases of the Genito-Urinary System.
Prof. R. Ogden Doremus, M. D., Lecturer on Animal Chemistry.
Prof. Austin Flint, Jr., M. D., Lecturer on Microscopical Anatomy.
Prof. George T. Elliot, M. D., Lecturer on Diseases of Children.
Prof. William A. Hammond, M. D., Lecturer on Diseases of the Nervous System.

A distinctive feature of the method of instruction in this College, is the union of clinical and didactic teaching. All the lectures are given within the hospital grounds. During the Regular Winter Session, in addition to four didactic lectures on every week day, except Saturday, two or three hours are daily allotted to clinical instruction. The union of clinical and didactic teaching will also be carried out in the Summer Session; nearly all of the teachers in this Faculty being physicians and surgeons in the great Charity Hospital on Blackwell's Island.

Fees for the Regular Session.

Fees for tickets to all the lectures during the Preliminary and Regular Term, in-

BELLEVUE HOSPITAL MEDICAL COLLEGE—Continued.

cluding clinical lectures, $140.

Tickets for any of the several departments may be taken out separately.

Matriculation fee, $5.

Demonstrator's ticket (including material for dissection), $10.

Graduation fee, $30.

Students who have attended two full courses in other accredited schools, receive all the tickets for $70, exclusive of the Matriculation fee. Students who have attended two full courses in this College, or after one full course in this College, having previously attended a full course in some other accredited schools, are required to matriculate only. Graduates of other accredited schools, after three years, dating from the time of graduation to the end of the term, are required to matriculate only; prior to three years they receive a general ticket for $70.

Fees for the Summer Session.

Matriculation fee (valid for the succeeding Winter Session), $5.

Fee for each of the separate courses of lectures, $10.

General ticket admitting to all the lectures, $50.

Graduates of the Bellevue Hospital Medical College will be admitted to the lectures of the Summer Session on the Matriculation ticket; all others will be required to take out tickets.

☞ The dissecting-room will be kept open until about the first of May.

Payment of fees is invariably required at the commencement of the Session. There are no exceptions to this rule.

Students, on arriving in the city, are requested to report at once at Bellevue Hospital, situated on the East River, between 26th and 28th Streets, and inquire for the Janitor of the College, who will take pains to aid them in securing comfortable accommodations, without delay.

Entrance to the Hospital is on 26th Street.

For the Annual Circular and Catalogue, giving regulations for graduation and other information, address the Secretary of the College, Professor Austin Flint, Jr., Bellevue Hospital Medical College.

For information concerning the Summer Session, address the Secretary of the College, or Prof. Henry D. Noyes, No. 68 Madison Avenue, Dean of the Summer Faculty.

FISKE MEDICAL PRIZE QUESTION.

The Trustees of the Fiske Fund, at the Annual Meeting of the Rhode Island Medical Society, held in Providence, June 5th, 1867, propose the following subjects for 1868:—

"THE LESSONS OF THE LATE WAR. IN WHAT HAS THE SCIENCE OF MEDICINE THEREBY BEEN ADVANCED?"

For the best dissertation on this subject the Trustees will pay the sum of Five Hundred Dollars.

Every competitor for a premium is expected to conform to the following regulations, viz:—

To forward to the Secretary of the Trustees, on or before the first day of May, 1868, free of all expense, a copy of his dissertation, with a motto written thereupon, and also accompanying a sealed packet, having the same motto inscribed upon the outside, and his name and place of residence within.

Previously to receiving the premium awarded, the author of the successful dissertation must transfer to the Trustees all his right, title, and interest in and to the same, for the use, benefit, and behoof of the Fiske Fund.

Letters accompanying the unsuccessful dissertations will be destroyed by the Trustees, unopened, and the dissertations may be procured by their respective authors, if application be made therefor within three months.

OTIS BULLOCK, Warren,
J. W. C. ELY, Providence, } *Trustees.*
GEO. L. COLLINS, Providence,

S. Aug. Arnold, Providence, *Secretary of Fiske Fund Trustees.*

PHILADELPHIA SUMMER SCHOOL OF MEDICINE,

No. 920 CHESTNUT STREET, PHILADELPHIA.

ROBERT BOLLING, M. D.	EDWARD A. SMITH, M. D.
JAMES H. HUTCHINSON, M. D.	D. MURRAY CHESTON, M. D.
H. LENOX HODGE, M. D.	HORACE WILLIAMS, M. D.

The Philadelphia Summer School of Medicine will begin its third term on March 1st, 1867, and students may enjoy its privileges without cessation until October.

The regular course of *Examinations* and *Lectures* will be given during April, May, June, and September, upon

ANATOMY, PHYSIOLOGY,
SURGERY, OBSTETRICS,
CHEMISTRY, MATERIA MEDICA,
PRACTICE OF MEDICINE.

The attention of the profession and of students is invited to the importance of systematic study and of clinical instruction during the summer as well as during the winter, in order to obtain a good medical education in the short time usually required, and to our plan of combining daily Recitations with Lectures and reading of Text-Books. The object of this school is to teach medicine thoroughly, and to make use of every method that is really valuable.

CLASS-ROOMS contain a cabinet of Materia Medica, Bones, Bandages, Manikins, Illustrations, Text-Books, Microscope, Chemical Reagents, etc., and in them students may study, practise bandaging, and conduct microscopical and chemical examinations.

SURGERY.—A course of Lectures will be delivered by H. Lenox Hodge, M. D., on the history, causes, symptoms, pathology, and treatment of Surgical Diseases and Injuries, and upon the employment of the Microscope. Ophthalmoscope, Otoscope, Laryngoscope, Endoscope, Percussion, Auscultation, and the Thermometer in recognizing such disorders.

PERCUSSION AND AUSCULTATION in Diseases of the Lungs and Heart will be taught by James H. Hutchinson, M. D., by Lectures, and by the Clinical Examination of patients.

MICROSCOPE.—The structure of the Microscope, and the manner of using it, will be explained, and the microscopical appearance of the tissues and fluids in health and disease will be exhibited.

URINARY DEPOSITS AND TESTS.—Students will be instructed in the microscopical and chemical examination of the urine, and will be enabled to make themselves familiar with its practical employment.

CLINICAL INSTRUCTION.

Pennsylvania Hospital.—The advantage of attending the Lectures, Operations, and Clinical Examinations of patients at this important hospital will be secured without charge.

Episcopal Hospital.—Drs. Hutchinson and Smith will take the class through its well-arranged wards, so that by the bedside disease may be readily recognized and its symptoms accurately studied.

Children's Hospital.—Much of a physician's practice being among children, it is essential that their various disorders should be seen by the student. Drs. Hodge, Hutchinson, and Cheston will, during the session, have charge of the numerous out-door and in-door patients of this establishment, and will offer every facility to the class.

Dispensary for Diseases of the Heart and Lungs will be conducted by Dr. Hutchinson in connection with his lectures.

FEE FOR THE WHOLE COURSE . . . FIFTY DOLLARS.

Or any part may be taken separately.

OFFICE STUDENTS will be received by Drs. Bolling, Hutchinson, and Hodge, at any period of the year; they will be admitted to the Summer School and to the Winter Examinations, and Clinical Instruction will be provided for them at the Pennsylvania, Philadelphia, Episcopal, and Children's Hospitals. They will be given special instruction in the Microscope, in Practical Anatomy, in Percussion and Auscultation. and in Practical Obstetrics. They will be enabled to examine persons with diseases of the heart and lungs, to attend women in confinement, and to make microscopical and chemical examinations of the urine. The class rooms will be open for study throughout the year.

WINTER COURSE OF EXAMINATIONS will begin with the Lectures at the University of Pennsylvania in October, and will continue till the close of the session.

Candidates for admission to the Army and Navy, and those desiring promotion to a higher grade, may obtain the use of the class-rooms, and be furnished with private instruction.

Fee for Office Students (one year)	$100
Fee for one Course of Examinations	30

Class-Rooms, No. 920 Chestnut Street, Philadelphia.

Apply to H. LENOX HODGE, M. D.,
N. W. corner Ninth and Walnut Streets.

[April and July.]

COLLEGE OF PHYSICIANS AND SURGEONS.

CORNER OF TWENTY-THIRD STREET AND FOURTH AVENUE, NEW YORK.

ANNUAL ANNOUNCEMENT.—SIXTY-FIRST SESSION, 1867–68.

The Regular Course of Lectures for the Session of 1867–8 will commence on Monday, the 14th of October, 1867, and will continue until early in the following March. This course will consist of from five to six Daily Lectures in the various departments of Medicine and Surgery, both elementary and practical, together with Daily Clinical Lectures, delivered both at the College and at the larger Hospitals.

FACULTY OF MEDICINE.

Edward Delafield, M. D., President, and Professor Emeritus of Obstetrics.

Robert Watts, M. D., Professor of Anatomy.

Willard Parker, M. D., Professor of the Principles and Practice of Surgery and Surgical Anatomy.

Thomas M. Markoe, M. D., Professor Adjunct of Surgery.

Alonzo Clark, M. D., Professor of Pathology and Practical Medicine.

John C. Dalton, M. D., Professor of Physiology and Microscopic Anatomy.

Samuel St. John, M. D., Professor of Chemistry.

T. Gaillard Thomas, M. D., Professor of Obstetrics and the Diseases of Women and Children.

John T. Metcalfe, M. D., Professor of Clinical Medicine.

Henry B. Sands, M. D., Lecturer Adjunct on Anatomy.

Freeman J. Bumstead, M. D., Lecturer on Materia Medica and on Venereal Diseases.

Erskine Mason, M. D., Demonstrator of Anatomy and Curator of the College Museum.

In the plan of instruction adopted in this institution, Clinical Teaching constitutes an important and prominent feature, all the practical subjects treated of in the Didactic Course being fully illustrated at the bedside. In the furtherance of this object, the extensive Hospitals of New York, of which the New York Hospital, the Bellevue Hospital, the Charity Hospital, Blackwell's Island, and the New York Eye Infirmary are the largest and most efficient, furnish ample fields for instruction and study. To all of these the Faculty of the College resort for the purposes of practical instruction. Cliniques being held daily in one or more of them—in the Bellevue Hospital by Professors Clark, Parker, Metcalfe, Thomas, and Sands; in the New York Hospital by Professors Parker, Markoe, and Sands; at the Charity Hospital, Blackwell's Island, by Drs. Bumstead and Mason; and at the New York Eye Infirmary by Drs. Bumstead and Sands.

Beside the Clinical Lectures given at the Hospitals, as above, there are six Cliniques each week at the College Building.

FEES.

Matriculation Fee, $5.

Fees for the full Course of Lectures by all the Professors, $140; for each separate ticket, $20.

Ticket of the Demonstrator of Anatomy, $10.

Graduation Fee, $30.

The Tickets are expected to be taken out at the beginning of the Session.

Letters requiring information should be directed to the *Secretary of the Faculty, College of Physicians and Surgeons, corner of Twenty-Third Street and Fourth Avenue, New York.*

ALBANY MEDICAL COLLEGE.

The next Course of Lectures in this College will commence on the first Tuesday in September and continue sixteen weeks.

Materials for dissection are abundant, and furnished to students on as reasonable terms as at any similar institution in the country. A spacious Hospital has been opened nearly opposite the College, to which students are admitted free of charge.

Clinical Lectures are delivered in the Hospital three days in the week. Surgical Cliniques are held regularly in the Hospital and College.

The working Laboratory of the College is open throughout the year.

PROFESSORS.

Alden March, M. D., Principles and Practice of Surgery.
James McNaughton, M. D., Theory and Practice of Medicine.
James H. Armsby, M. D., Descriptive and Surgical Anatomy.
J. V. P. Quackenbush, M. D., Obstetrics and Diseases of Women and Children.
Jacob S. Mosher, M. D., Chemistry and Medical Jurisprudence.
S. Oakley Vanderpoel, M. D., General Pathology and Clinical Medicine.
James E. Pomfret, M. D., Physiology.
John V. Lansing, M. D., Materia Medica.

The catalogue and circular containing full information can be obtained by applying to the Registrar,

JACOB S. MOSHER, *Registrar*,
Albany, N. Y.

BOYLSTON MEDICAL PRIZE QUESTIONS.

The Boylston Medical Committee, appointed by the President and Fellows of Harvard University, consists of the following Physicians:—

Edward Reynolds, M. D.
John Jeffries, M. D.
S. D. Townsend, M. D.
J. B. S. Jackson, M. D.
J. Mason Warren, M. D.
D. H. Storer, M. D.
Charles G. Putnam, M. D.
Morrill Wyman, M. D.
Henry J. Bigelow, M. D.

At the Annual Meeting of the Committee, on Wednesday, June 5th, 1867, it was decided that no dissertation had been presented on either of the questions proposed, that was worthy of a prize.

The following are the questions proposed for 1868:—

1. *The Physical and Mental Influences of the United States and Canada upon Immigrant European Races.*

2. *Question of the Contagiousness of Asiatic Cholera in the United States.*

The author of the best dissertation on either of the subjects proposed for 1868 will be entitled to a premium of *one hundred dollars.*

Dissertations on these subjects must be transmitted, postpaid, to John Jeffries, M. D., *on or before the first Wednesday in April*, 1868.

The following questions are proposed for 1869:—

1. *Food in Disease, Acute and Chronic. Its Variety, Advantages, Dangers, and Relation to Appetite.*

2. *The Surgical Treatment of Hemorrhoids; and the Surgical Treatment of Fistula in Ano, with its Result.*

Dissertations on these subjects must be transmitted as above, on or before the first Wednesday in April, 1869.

The author of the best dissertation, considered worthy of a prize, on either of the subjects proposed for 1869, will be entitled to a premium of *one hundred and fifty dollars.*

Each dissertation must be accompanied by a sealed packet, on which shall be written some device or sentence, and within which shall be inclosed the author's name and residence. The same device or sentence is to be written on the dissertation to which the packet is attached.

The writer of each dissertation is expected to transmit his communication to the President, John Jeffries, M. D., in a legible handwriting, within the time specified.

All unsuccessful dissertations are deposited with the Secretary, from whom they

BOYLSTON MEDICAL PRIZE QUESTIONS—Continued.

may be obtained, with the sealed packet unopened, if called for within one year after they have been received.

By an order adopted in 1826, the Secretary was directed to publish annually the following votes:—

1st. That this Board do not consider themselves as approving the doctrines contained in any of the dissertations to which premiums may be adjudged.

2d. That in case of publication of a successful dissertation, the author to be considered as bound to print the above vote in connection therewith.

J. MASON WARREN,
Secretary.

Publishers of Newspapers and Medical Journals throughout the country are respectfully requested to notice the above.

UNIVERSITY OF LOUISVILLE—MEDICAL DEPARTMENT.

FACULTY.

T. S. Bell, M. D., Professor Emeritus of the Science and Practice of Medicine and Public Hygiene.
H. Miller, M. D., Professor of the Medical and Surgical Diseases of Women.
L. Powell, M. D., Professor of Obstetrics.
L. Rogers, M. D., Professor of Materia Medica and Therapeutics.
G. W. Bayless, M. D., Professor of Surgery.
H. M. Bullitt, M. D., Professor of Physiology and General Pathology.
C. W. Wright, M. D., Professor of Chemistry.
D. W. Yandell, M. D., Professor of the Science and Practice of Medicine.
J. M. Bodine, M. D., Professor of Anatomy and Dean of the Faculty.
T. P. Satterwhite, M. D., Demonstrator of Anatomy.

The next regular session will commence on the second Monday in October and continue until the 1st of March. The dissecting rooms will be opened on the 1st of October, and two preliminary lectures will be delivered daily at the College, with Clinical instruction at the City Hospital until the regular lectures begin.

Fees.—Professors' tickets in full, $120; Demonstrator's ticket, $10; Matriculation fee, $5; Graduation fee, $25.

For information address J. M. BODINE,
Dean of the Faculty.

DEPARTMENT OF MEDICINE AND SURGERY IN THE UNIVERSITY OF MICHIGAN.

Rev. Erastus O. Haven, D. D., LL. D., *President of the University.*

OFFICERS AND MEMBERS OF THE MEDICAL FACULTY.

Dean—Silas H. Douglas, M. D.

Zina Pitcher, M. D., Emeritus Professor of the Institutes of Medicine and Obstetrics.
Abram Sager, M. D., Professor of Obstetrics and Diseases of Women and Children.
Silas H. Douglas, M. D., Professor of Chemistry, Pharmacy, and Toxicology.
Alonzo B. Palmer, M. D., Professor of Pathology and Practice of Medicine.
Corydon L. Ford, M. D., Professor of Anatomy and Physiology.
Samuel G. Armor, M. D., Professor of the Institutes of Medicine and Materia Medica.
Warren Green, M. D., Professor of Surgery.
Preston B. Rose, M. D., and A. E. Foote, M. D., Assistants in the Chemical Department.
———— ———— Demonstrator of Anatomy.

The Lectures for the Session of 1867–8 will commence on the first day of October next, and continue till the last of March. Established and supported by the State, this Institution presents to the medical student facilities for the successful prosecution of his studies unsurpassed by any similar institution in the country. The number of students at the last session was 527.

Fees for Michigan students, $20 for the first year, and $10 for all subsequent years. For all others $30 for the first year, and $10 for all subsequent years.

For further particulars address at Ann Arbor, Michigan,

SILAS H. DOUGLAS, *Dean.*

THE

AMERICAN JOURNAL
OF THE MEDICAL SCIENCES

FOR OCTOBER 1867.

CONTRIBUTORS TO THIS VOLUME.

HARRISON ALLEN, M. D., *Prof. of Zool. and Compar. Anat. in University of Penna.*
JOHN ASHHURST, Jr., M. D., *one of the Surgeons to the Episcopal Hospital, Phila.*
WALTER F. ATLEE, M. D., *one of the Surgeons to St. Joseph's Hospital, Philadelphia.*
ROBERTS BARTHOLOW, M. D., *Prof. of Mat. Med. and Therap. in Med. Coll. of Ohio.*
T. H. BARTON, M. D., *of Syracuse, Ohio.*
J. M. BOISNOT, M. D., *of Philadelphia.*
ROBERT BRIDGES, M. D., *Professor of Chemistry in Phila. College of Pharmacy.*
JOHN H. BRINTON, M. D., *one of the Surgeons to St. Joseph's Hospital, Philadelphia.*
BEDFORD BROWN, M. D., *of Washington, D. C.*
THOS. H. BUCKLER, M. D., *of Baltimore, Md.*
J. M. CARNOCHAN, M. D., *Surgeon-in-Chief to the State Hospital, New York.*
J. SOLIS-COHEN, M. D., *of Philadelphia.*
D. FRANCIS CONDIE, M. D., *of Philadelphia.*
PLINY EARLE, M. D., *Superintendent of Massachusetts Hosp. for Insane, Northampton.*
THOMAS ADDIS EMMET, M. D., *Surgeon to the New York State Woman's Hosp.*
AUSTIN FLINT, M. D., *Prof. of Princ. and Prac. Med. in Bellevue Hosp. Med. Coll., New York.*
W. S. FORBES, M. D., *one of the Surgeons to the Episcopal Hospital, Philadelphia.*
CLARKSON FREEMAN, M. D., *of Milton, Canada West.*
M. FORSTER, M. D., *Thorndale, Ontario, Canada.*
C. B. GALLOWAY, M. D., *of Canton, Miss.*
W. H. H. GITHENS, M. D., *late Resident Phys. at Philadelphia Hospital, Blockley.*
JOHN GREEN, M. D., *of St. Louis, Mo.*
SAMUEL W. GROSS, M. D., *of Philadelphia.*
ISAAC HAYS, M. D., *formerly one of the Surgeons to the Wills Hospital.*
E. HOLDEN, M. D., *of Newark, N. J.*
JAS. HUTCHINSON, M. D., *one of the Physicians to the Episcopal Hospital, Phila.*
JAMES. V. INGHAM, M. D., *Resident Physician at the Episcopal Hospital, Phila.*
R. A. KINLOCH, M. D., *Prof. Mat. Med. and Therap. in Med. Coll. State of S. Carolina.*
M. CAREY LEA, Esq., *of Philadelphia.*
J. AITKEN MEIGS, M. D., *of Philadelphia.*
J. D. MILLER, M. D., *Surgeon U. S. N.*
S. WEIR MITCHELL, M. D., *of Philadelphia.*
W. P. MOON, M. D., *late Executive Officer, Mower U. S. A. Hospital, Philadelphia.*
A. A. MOORE, M. D., *of Camden, S. C.*
THOMAS G. MORTON, M. D., *one of the Surgeons to the Pennsylvania Hospital.*
J. C. NOTT, M. D., *of Baltimore, Md.*
A. NEBINGER, M. D., *of Philadelphia.*
THEODORE RICHARDS NOYES, M. D., *of New Haven, Conn.*
CHARLES W. OLESON, M. D., *of Bloomingdale, Ill.*
HENRY K. OLIVER, M. D., *of Boston, Mass.*
J. H. PACKARD, M. D., *one of the Surgeons to the Episcopal Hospital, Philadelphia.*
JOHN PARSONS, M. D., *of Mount Pleasant, Kansas.*
THEOPHILUS PARVIN, M. D., *Prof. of Diseases of Women in Med. Coll. of Ohio.*
WILLIAM PEPPER, M. D., *one of the Physicians to the Philadelphia Hospital, Blockley.*
J. H. POOLEY, M. D., *Yonkers, N. Y.*
S. J. RADCLIFFE, M. D., *Washington, D. C.*
D. N. RANKIN, M. D., *Physician to Western Penitentiary of Pennsylvania.*
J. A. REAGAN, M. D., *Run's Creek, N. C.*
J. C. REEVE, M. D., *of Dayton, Ohio.*
EDW. RHOADS, M. D., *one of the Physicians to the Philadelphia Hospital, Blockley.*
P. M. RIVERS, M. D., *of Waterboro', South Carolina.*
W. S. W. RUSCHENBERGER, M. D., *Surgeon U. S. N.*
J. H. SALISBURY, M. D., *Professor of Histology, Physiology, and Cell Pathology in Charity Hospital Medical College, Cleveland, Ohio.*
J. F. SHAFFNER, M. D., *of Salem, N. C.*
CHARLES C. SHOYER, M. D., *of Leavenworth, Kansas.*
R. STEWART, M. D., *of Philadelphia.*
JAMES TYSON, M. D., *Microscopist to the Philadelphia Hospital, Blockley.*
PHILIP S. WALES, M. D., *Surgeon U. S. N.*
W. LEHMAN WELLS, M. D., *of Philadelphia.*
JARED B. WOOD, M. D., *Croton Falls, N. Y.*
JOSEPH WORSTER, M. D., *of New York City.*
THOS. J. YARROW, M. D., *of Philadelphia.*

TO READERS AND CORRESPONDENTS.

Communications have been received from Drs. W. G. Bulloch, D. W. Prentiss, John Ashhurst, Jr., S. W. Gross, J. H. Salisbury, Jerome Cochran, Albert L. Gihon, C. A. Lee, Jos. Worster, D. B. Putnam, T. A. Smurr, Chas. C. Shoyer, W. Fitch, A. P. Carr, J. C. Hubbard, S. K. Crawford, J. G. Knox, Geo. Martin, Henry G. Todd, W. M. Doran, W. C. Crooks, S. G. Weller, Ed. Borck, W. P. Moon, and M. W. Case, all of which, with the papers already acknowledged and not yet published, shall receive a respectful consideration when articles are selected for the January number.

All articles intended for the *Original Department* of this Journal must be communicated to it *exclusively.* As original articles are accepted only on this condition, we consider those who favour us with contributions to be bound in honour to conform to it.

Contributors who wish their articles to appear in the next number, should forward them before the 1st of November.

Compensation is allowed for original articles, and reviews, *except* when illustrations or extra copies are required. A *limited* number of extra copies will be furnished to authors *if the request for them be made when the communication is sent.* The extensive circulation of this Journal renders extra copies of comparatively little value to authors who desire their observations made known only to their professional brethren.

The following works have been received:—

Syphilitic Affections of the Nervous System; and a case of Symmetrical Atrophy; with other contributions to the Pathology of the Spinal Marrow. By Thomas Reade, M. D., T. C. D., L. R. C. S. I. London: John Churchill & Sons, 1867.

On the Principles of Æsthetic Medicine, or the Natural Use of Sensation and Desire in the Maintenance of Health and the Treatment of Disease, as demonstrated by induction from the common facts of Life. By Joseph Peel Catlow, M. R. C. S. London: John Churchill & Sons, 1867.

On the Formation of so-called Cells in Animal Bodies. By Edmund Montgomery, M. D., late Demonstrator of Morbid Anatomy at St. Thomas' Hospital. London: John Churchill & Sons, 1867.

Diarrhœa and Cholera: their Nature, Origin, and Treatment through the agency of the Nervous System. By John Chapman, M. D., M. R. C. P., M. R. C. S. Second edition, enlarged. London: Trübner & Co., 1866. (From the Author.)

The Waste of Infant Life. By J. Brendon Curgenven, M. R. C. S. Read at a Meeting of the Health Department of the National Association for the Promotion of Social Science. London, 1867. (From the Author.)

On Choleostoma. By F. Bateman, M. D., M. R. C. P., Physician to the Norfolk and Norwich Hospital. London, 1867. (From the Author.)

New Researches on the Therapeutical Use of Manganese as an adjuvant of Iron. By Dr. J. E. Petrequin, late Head Surgeon of the Hôtel-Dieu of Lyons, &c. Paris: Grimault & Co., 1866.

A Treatise on Human Physiology; designed for the use of Students and Practitioners of Medicine. By John C. Dalton, M. D., Professor of Physiology and Microscopic Anatomy in College Phys. and Surg., New York, &c. &c. &c. Fourth edition, revised and enlarged, with 274 illustrations. Philadelphia: Henry C. Lea, 1867.

On Railway and other Injuries of the Nervous System. By John Eric Erichsen, F. R. C. S., Professor of Surgery and of Clinical Surgery in the University College. Philadelphia: Henry C. Lea, 1867.

Essentials of the Principles and Practice of Medicine. A Handy-Book for Students and Practitioners. By Henry Hartshorne, M. D., Professor of Hygiene in University of Pennsylvania, lately Physician to the Episcopal Hospital of Philadelphia, etc. etc. etc. Philadelphia: Henry C. Lea, 1867.

Chemistry. By William Thomas Brande, D. C. L., F. R. S. I. & E. of her Majesty's Mint, etc., and Alfred Swaine Taylor, M. D., F. R. S., F. R. C. P. Lond., Prof. of Chemistry and Med. Jurisprudence in Guy's Hospital. Second American edition, thoroughly revised. Philadelphia: Henry C. Lea, 1867.

Injuries of the Eye, Orbit, and Eyelids: their Immediate and Remote Effects. By George Lawson, F. R. C. S. Eng., Asst. Surgeon to the Royal London Ophthalmic Hospital, Moorfields, and to the Middlesex Hospital, etc. With numerous illustrations. Philadelphia: Henry C. Lea, 1867.

The Physiology and Pathology of the Mind. By Henry Maudsley, M. D., Lond., Physician to the West London Hospital, Honorary Member of the Medico-Psychological Society of Paris, etc. New York: D. Appleton & Co., 1867.

The Physiology of Man; designed to represent the existing state of Physiological Science, as applied to the Functions of the Human Body. By Austin Flint, Jr., M. D., Prof. Phys. and Microscopy in Bellevue Hosp. Med. Col., N. Y., and in Long Island Coll. Hosp., Fellow N. Y. Acad. of Med., etc. etc. Alimentation, Digestion, Absorption, Lymph and Chyle. New York: D. Appleton & Co., 1867.

A Treatise on Emotional Disorders of the Sympathetic System of Nerves. By William Murray, M. D., M. R. C. P. Lond. New York: A. Simpson & Co., 1867.

Micro-Chemistry of Poisons, including their Physiological, Pathological, and Legal Relations: adapted to the use of the Medical Jurist, Physician, and general Chemist. By Theo. G. Wormley, M. D., Prof. of Chemistry and Toxicology in Starling Medical College, and of Natural Sciences in Capital University, Columbus, Ohio. With 78 illustrations upon steel. New York: Baillière Brothers, 1867.

Atlas of Surgical and Topographical Anatomy. By B. J. Béraud, Surgeon and Prof. to Maternity Hospital of Paris, etc. Illustrated by one hundred plates, drawn from nature, by M. Bion. Translated by Robert Thomas Hulme, M. R. C. S. Eng. London: H. Baillière, 1866. Parts 8, 9, 10, 11.

Clinical Lectures on the Principles and Practice of Medicine. By John Hughes Bennett, M. D., F. R. S. E., Prof. Institutes of Med., and Senior Professor of Clinical Medicine in the Univ. of Edinburgh. Fifth American from the Fourth London edition, with 537 illustrations on wood. New York: William Wood & Co., 1867.

The Medical Uses of Electricity, with special reference to General Electrization as a Tonic in Neuralgia, Rheumatism, Dyspepsia, Chorea, Paralysis, and other affections associated with general debility. With illustrative cases. By Geo. M. Beard, M. D., and A. D. Rockwell, M. D., New York: William Wood & Co., 1867.

A Biennial Retrospect of Medicine, Surgery, and their allied Sciences. Edited by Mr. H. Power, Dr. Anstie, Mr. Holmes, Mr. Thomas Windsor, Dr. Barnes, and Dr. C. Hilton Fagge, for the New Sydenham Society. Philadelphia: Lindsay & Blakiston, 1867.

A Dictionary of Medical Terminology, Dental Surgery, and the Collateral Sciences. By Chapin A. Harris, M. D., D. D. S., Prof. of Principles of Dental Surgery in the Baltimore College, etc. Third edition, carefully revised and enlarged, by Ferdinand J. S. Gorgas, M. D., D. D. S., Prof. Dental Surg. in Baltimore Coll. Philadelphia: Lindsay & Blakiston, 1867.

The Physician's Visiting List for 1868. Philadelphia: Lindsay & Blakiston.

Chemistry of the Farm and Sea. With other familiar Chemical Essays. By Jas. R. Nichols, M. D., editor "Boston Journal of Chemistry," Member of Mass. Institute of Technology, etc. Boston: A. Williams & Co., 1867.

Notes on the Origin, Nature, Prevention, and Treatment of Asiatic Cholera. By John C. Peters, M. D. Second edition, with an Appendix. New York: D. Van Nostrand, 1867.

The Principles and Practice of Disinfection. By Roberts Bartholow, A.M., M.D., Prof. Materia Medica and Therapeutics in the Med. Coll. of Ohio, etc. Cincinnati: R. W. Carroll & Co., 1867.

An Essay on the Ligation and Management of the Umbilical Cord at Childbirth. By A. F. A. King, M. D., Member of the Clinico-Pathological Society of D. C., and of the Am. Med. Assoc. Washington, 1867.

Perineal Urethrotomy. Relation of a case suggestive of remarks on the Treatment of Stricture of the Urethra. By Wm. R. Whitehead, M. D., etc. New York.

Spotted or Congestive Fever. By C. B. Coventry, M. D., of Utica, N. Y. Albany: 1867.

The Administration of Chloroform by Deglutition. By Jerome Cochran, M. D., of Mobile, Alabama. Nashville, Tenn., 1867.

The Transactions of the American Medical Association. Instituted 1847. Vol. XVIII. Philadelphia, 1867.

The Transactions of the Indiana State Medical Society at its Seventeenth Annual Session, held at Indianapolis, May 21 and 22, 1867. Indianapolis, 1867.

Medical Communications of the Massachusetts Medical Society, Vol. XI., No. 1, 1867. Second Series, Vol. VIII Part I. Boston, 1867.

Minutes of the Proceedings of the Fourteenth Annual Meeting of the Medical Society of the State of North Carolina, held at Tarboro', N. C., 15th May, 1867. Wilmington, N. C., 1867. (From Dr. Wood.)

Transactions of the Medical Society of the State of Kansas, for the year 1867. Leavenworth, 1867.

Proceedings of the Academy of Natural Sciences of Philadelphia, April, May, 1867.

Report of the Committee on Disinfectants made to the Board of Health of Washington, D. C., June 4, 1867. Washington, 1867. (From D. Webster Prentiss, M. D.)

Report of the Board of Health for the year ending April 1, 1865. Presented to the Board of Trustees of the City of Sacramento on the 26th day of June, A. D. 1865.

Report of the Board of Health to the Common Council of the City of Troy. Presented April 4, 1867. (From Benj. S. Catlin, M. D.)

Annual Report of the Commissioners of Emigration of the State of New York for the year ending December 31, 1866. New York, 1867.

Ninth Annual Report of the Chicago Charitable Eye and Ear Infirmary. Presented by the Board of Surgeons for the year ending May 1, 1867. Chicago, 1867.

Report of the Board of Managers of the Pennsylvania Hospital to the Contributors at their Annual Meeting, held Fifth Month 6th, 1867. Together with the accounts of the Treasurer and Steward. Philadelphia, 1867.

The following Journals have been received in exchange:—

Revue de Thérapeutique Médico-Chirurgicale. Par A. Martin-Lauzer, M. D. Nos. 11, 12, 13, 14, 15, 16, 17, 1867.

The Half-Yearly Abstract of the Medical Sciences, Vol. XLV. January—June, 1867. London: John Churchill & Sons, 1867.

The Retrospect of Medicine, edited by W. Braithwaite, M. D., late Lecturer on Midwifery and the Diseases of Women and Children at the Leeds School of Medicine, etc., and James Braithwaite, M. D. Vol. LV. January—June, 1867. London: Simpkin, Marshall & Co., 1867.

The British and Foreign Medico-Chirurgical Review. July, 1867.

The Medical Times and Gazette. June, July, August, September, 1867.

The British Medical Journal. Nos. 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 347, 348, 349 (1867).

Dublin Quarterly Journal of Medical Science. May, 1867.

Edinburgh Medical Journal. June, July, August, 1867.

The Glasgow Medical Journal. April, June, July, August, September, 1867.

Journal of Cutaneous Medicine and Diseases of the Skin. Edited by Erasmus Wilson, F. R. S. July, 1867.

Indiana Annals of Medical Science. July, 1867.

The Medical Mirror. July, August, September, 1867.

Medical Press and Circular. June, July, August, 1867.

Canada Medical Journal. Edited by G. E. Fenwick, M. D., and F. W. Campbell, M. D. June, July, 1867.

The Boston Medical and Surgical Journal. Edited by Samuel Abbot, M. D., and Luther Parks, Jr., M. D. July, August, September, 1867.

The American Journal of Insanity. Edited by the Medical Officers of the New York State Lunatic Asylum. July, 1867.

The Cincinnati Lancet and Observer. Edited by Edward B. Stevens, M. D., and John A. Murphy, M. D. July, August, September, 1867.

The St. Louis Medical and Surgical Journal. Edited by M. L. Linton, M. D., and Frank W. White, M. D. July, August, September, October, 1867.

The New York Medical Journal. July, August, 1867.

The Medical Record. July, August, September, 1867.

The Buffalo Medical and Surgical Journal. Edited by Julius F. Miner, M. D. June, July, August, 1867.

The Chicago Medical Examiner. Edited by N. S. Davis, M. D. July, 1867.

The Chicago Medical Journal. August, September, 1867.

The Medical and Surgical Reporter. Edited by S. W. BUTLER, M. D., and D. G. BRINTON, M. D. July, August, September, 1867.

The Western Journal of Medicine. Edited by THEOPHILUS PARVIN, M. D. July, August, September, 1867.

The Richmond Medical Journal. Edited by E. S. GAILLARD, M. D , and W. S. McCHESNEY, M. D. June, July, September, 1867. Nos. for March and August not received.

Atlanta Medical and Surgical Journal. Edited by J. G. WESTMORELAND, M. D., and W. F. WESTMORELAND, M. D. August, September, 1867.

Southern Journal of Medical Sciences. Edited by D. WARREN BRICKELL, M. D., C. BEARD, M. D., and W. S. MITCHELL, M. D. August, 1867.

The Saint Louis Medical Reporter. Edited by J. S. B. ALLEYNE, M. D., and O. F. POTTER, M. D. July, August, September, 1867.

The Nashville Journal of Medicine and Surgery. Edited by W. K. BOWLING, M. D. July, August, September, 1867.

The Galveston Medical Journal. Edited by GREENSVILLE DOWELL, M. D. June, July, 1867.

The Pacific Medical and Surgical Journal. Edited by HENRY GIBBONS, M. D., and HENRY GIBBONS, Jr., M. D. June, July, August, 1867.

The Detroit Review of Medicine and Pharmacy. Edited by G. P. ANDREWS, M. D., S. P DUFFIELD, Ph. D., and E. W. JENKS, M. D. June, July, August, 1867.

The Leavenworth Medical Herald. Edited by L. A. LOGAN, M. D., and T. SINKS, M. D. July, August, September, 1867.

The Quarterly Journal of Psychological Medicine and Medical Jurisprudence. Edited by WILLIAM A. HAMMOND, M. D. July, 1867.

The Humboldt Medical Archives. Edited by Drs. A. HAMMER and M. A. PALLEN. September, 1867.

The American Journal of Pharmacy. Published by Authority of the Philadelphia College of Pharmacy. Edited by WM. PROCTER, Jr. July, September, 1867.

The Druggists' Circular and Chemical Gazette. July, August, September, 1867.

The Journal of Materia Medica. Conducted by JOSEPH BATES, M. D., and H. A. TILDEN. June, July, 1867.

The American Journal of Science and Arts. July, Sept., 1867.

The American Naturalist. July, September, 1867.

The Dental Cosmos. Edited by J. H. McQUILLEN, D. D. S., and GEORGE J. ZIEGLER, M. D. July, September, 1867.

The Chemical News, July, August, September, 1867.

Communications intended for publication, and Books for Review, should be sent *free of expense*, directed to ISAAC HAYS, M. D., Editor of the American Journal of the Medical Sciences, care of Mr. Henry C. Lea, Philadelphia. Parcels directed as above, and (carriage paid) under cover, to Mr. Charles J. Skeet, Bookseller, No. 10 King William Street, Charing Cross, *London;* or M. Hector Bossange, Lib. quai Voltaire, No. 11, *Paris*, will reach us safely and without delay.

All remittances of money and letters on the *business* of the *Journal* should be addressed *exclusively* to the publisher, Mr. H. C. Lea, No. 706 Sansom Street.

The advertisement sheet belongs to the business department of the *Journal*, and all communications for it must be made to the publisher.

CONTENTS

OF THE

AMERICAN JOURNAL

OF THE

MEDICAL SCIENCES.

NO. CVIII. NEW SERIES.

OCTOBER 1867.

ORIGINAL COMMUNICATIONS.

MEMOIRS AND CASES.

ART. PAGE

I. Vesico-Vaginal Fistula: the Preparatory Treatment and Mode of Operation. By Thomas Addis Emmet, M. D., Surgeon to the New York State Woman's Hospital, New York. 313

II. On Causes of Death from Chloroform, with an Analysis of the Reported Fatal Cases from the Inhalation of that Agent, and an endeavour to classify them. By J. C. Reeve, M. D., of Dayton, Ohio. 322

III. Experimental Researches on the Excretion of Urea. By Theodore Richards Noyes, M. D. An Inaugural Thesis, presented to the Examining Committee and Faculty of the Medical Institution of Yale College, for the Degree of Doctor of Medicine. 345

IV. Remarks on the Structure, Functions, and Classification of the Parent Gland Cells, with Microscopic Investigations relative to the Causes of the several varieties of Rheumatism, and Directions for their Treatment. By J. H. Salisbury, M. D., Prof. of Histology, Physiology, and Cell Pathology in Charity Hospital Medical College, Cleveland, Ohio. (With nine figures.) 359

V. On some Points Relating to Fractures of the Neck of the Femur. By John H. Packard, M. D., one of the Surgeons to the Episcopal Hospital, Philadelphia; Mütter Lecturer on Surgical Pathology, etc. (With eight wood-cuts.) 377

VI. On the Treatment of Remittent and Yellow Fevers. By J. D. Miller, M. D., Surgeon U. S. N. 390

VII. Three Cases of Ligature of Femoral Artery; Two Recoveries; at Mower U. S. A. Hospital. By W. P. Moon, M. D., Philadelphia, Pa. . 392

VIII. Simultaneous Dislocation of Both Hip-Joints; reduced by Manipulation. By J. M. Boisnot, M. D., Philadelphia. 396

IX. Cephalic Version in Shoulder Presentations. By R. Stewart, M. D. . 398

X. Case of Extraordinary Hypertrophy of Cervix Uteri. By J. C. Nott, M. D., Baltimore, Md. 403

XI. A Case of Reduction of a Completely Inverted Uterus of Four Years' Standing, by Means of Pressure and a Peculiar Mode of Manipulation. By Joseph Worster, M. D., of New York City. 405

XII. Case of Congenital Malformation and Deficiency of the Upper Extremities. By J. H. Pooley, M. D., of Yonkers, N. Y. 409

TRANSACTIONS OF SOCIETIES.

ART. PAGE
XIII. Summary of the Proceedings of the Pathological Society of Philadelphia. 411
Fibrous Tumour of Uterus. By Dr. Hutchinson. 411
On the Structural Changes in a Specimen of Flat-Foot. By Dr. Harrison Allen. (With a wood-cut.) 412
Extensive Encephaloid Cancer of the Subserous Tissues of the Peritoneum and Pleura. Intensely Bronze-coloured Skin. Supra-renal Capsules healthy. By Dr. Mitchell. 413
Small Intestinal Concretion in the Appendix Veriformis Cæci; Ulceration and probable Perforation of the Appendix; General Peritonitis; Death after five days' duration of the Acute Symptoms. By Dr. Wm. Pepper. 416
Rupture of the Bladder. By Dr. James V. Ingham. 418
Rupture of Heart. By Dr. Thos. J. Yarrow. 421

REVIEWS.

XIV. Military Surgery.
1. Handbuch der Kriegschirurgie. Von J. Neudörfer, M. D., Docent der Allgemeinen und Klinischen Chirurgie an der Universität in Prag, k. k. Regimentsarzt, etc., 8vo. Erste Hälfte, Allgemeiner Theil, pp. 441. Zweitze Hälfte, Specieller Theil, Kapitel I., Verletzungen des Kopfes, pp. 132. Leipzig: Vogel. 1864–1867.
A Manual of Military Surgery. By J. Neudörfer, M. D., Professor of General and Clinical Surgery in the University of Prague, Regimental Surgeon of the Royal Austrian Army, etc.
2. Annual Report of Dr. P. J. Horwitz, Chief of the Bureau of Medicine and Surgery of the U. S. Navy, embracing a statement of the Casualties from Gunshot Wounds in the Navy, from April 21, 1861, to June 30, 1865. 8vo. pp. 26. Washington: Navy Department, November, 1866.
3. Report on the Extent and Nature of the Materials Available for the Preparation of a Surgical History of the Rebellion, made to the Surgeon General U. S. Army. By George A. Otis, M. D., Brevet Lieut.-Col. and Surgeon U. S. Vols. Circular No. 6. War Department, Surgeon General's Office, Washington, November 1, 1865, 4to. pp. 88.
4. Grundzüge der Allgemeinen Kriegschirurgie. Nach Reminiscenzen aus der Kriegen in der Krim und im Kaukasus, und aus der Hopitalpraxis. Von N. Pirogoff. 8vo. pp. 1168. Leipzig: Vogel. 1864.
Elements of General Military Surgery, based upon Observations made in the Crimean and Caucasian Wars, and Hospital Practice. By N. Pirogoff.
5. Traité de Chirurgie d'Armée. Par L. Legouest, Medecin Principal d'Armée, etc. etc. 8vo. pp. 999. Paris: J. B. Baillière et Fils. 1863.
A Treatise on Military Surgery. By L. Legouest, Medical Director of the French Army, etc.
6. Military Surgery. By George Williamson, M. D., Surgeon-Major 64th Regiment. 8vo. pp. 255. London: John Churchill & Sons. 1863.
7. Maximen der Kriegsheilkunst. Von Dr. L. Stromeyer, Königlich Hannoverschem Generalstabsarzte, etc. etc. 8vo. pp. 594. Hannover: Hahn. 1861.
Maxims of Military Surgery. By L. Stromeyer, M. D., Surgeon of the General Staff of the Royal Hanoverian Army, etc.
8. Militär-Chirurgische Studien in der Italianischen Lazarethen von 1859. Von Dr. Hermann Demme, Docenten an der Universität Bern. Würzburg: Stahl. 1861.
Studies in Military Surgery from Observations in the Italian Hospitals in 1859. By Hermann Demme, M. D., Lect. in Univ. of Bern.

ART. PAGE

9. Notes on the Surgery of the War in the Crimea, with Remarks on the Treatment of Gunshot Wounds. By George H. B. Macleod, M. D., Lecturer on Military Surgery in Anderson's University, Glasgow, etc. etc., pp. 429. London: Churchill. 1858.

10. Medical and Surgical History of the British Army which served in Turkey and the Crimea during the War against Russia in the years 1854–55–56. Parliamentary Blue Book. 2 vols. 4to. Surgical Section. Histories of Wounds and Injuries. By T. P. Matthew, Staff Surgeon. Vol. II. pp. 146. London, 1858.

11. On Resection in Gunshot Injuries. By Dr. Friedrich Esmarch. Slightly abridged and translated by S. F. Statham. 8vo. pp. 69. London: Tatton. 1856. 423

XV. Club-Foot; its Causes, Pathology and Treatment: being the Essay to which the Jacksonian prize for 1864. given by the Royal College of Surgeons, was awarded. By William Adams, F. R. C. S., etc. etc. With one hundred illustrations on wood and stone. 8vo. pp. xviii., 422. London: John Churchill & Sons, 1866. 482

BIBLIOGRAPHICAL NOTICES.

XVI. Transactions of American State Medical Societies.

1. Transactions of the Medical Society of the State of New York, for the year 1866. 8vo. pp. 422.
2. Transactions of the Indiana State Medical Society, at its Seventeenth Annual Session, held at Indianapolis, May 21 and 22, 1867. 8vo. pp. 132. Indianapolis, 1867. 493

XVII. Reports of American Hospitals for the Insane.

1. Of the Butler Hospital, for the year 1866.
2. Of the McLean Asylum, for the year 1866.
3. Of the Worcester Hospital, for the fiscal year 1865–66.
4. Of the Asylum for Insane Convicts (Auburn, N. Y.), for the fiscal year 1865–66.
5. Of the New Jersey State Asylum, for the year 1866.
6. Of the Mount Hope Institution for the year 1866.
7. Of the Western Asylum of Virginia, for the fiscal year 1865–66.
8. Of the Longview Asylum, Hamilton Co., Ohio, for the fiscal year 1865–66. 500

XVIII. Modern Inquiries: Classical Professional, and Miscellaneous. By Jacob Bigelow, M. D., late President of the American Academy of Arts and Sciences, and late Professor in Harvard University. 12mo. pp. 370. Boston: Little, Brown & Co., 1867, ... 504

XIX. A Treatise on Human Physiology; designed for the Use of Students and Practitioners of Medicine. By John C. Dalton, M. D., Professor of Physiology and Microscopic Anatomy in the College of Physicians and Surgeons, New York; Member of the American Academy of Arts and Sciences, Boston, Mass.; of the National Academy of Sciences of the United States of America, etc. etc. Fourth edition, revised and enlarged, with 274 illustrations. 8vo. pp. 695. Philadelphia: Henry C. Lea, 1867. 505

XX. Essentials of the Principles and Practice of Medicine. A Handy Book for Students and Practitioners. By Henry Hartshorne, M. D., etc. etc. Large 12mo. pp. 417. Philadelphia: H. C. Lea, 1867. 506

XXI. Ununited Fracture successfully treated, with Remarks on the Operation. By Henry J. Bigelow, M. D., Professor of Surgery in the Medical College of Harvard University; with abstracts from Dr. Bigelow's Clinical Lectures on the subject, and cases. [Reported by Richard H. Derby.] 8vo. pp. 25. Boston: David Clapp & Son, 1867. . . . 507

XXII. The Preparation and Mounting of Microscopic Objects. By Thomas Davies. 12mo. pp. 144. New York: William Wood & Co. . . . 508

XXIII. Micro-chemistry of Poisons, including their Physiological, Pathological, and Legal Relations; adapted to the Use of the Medical Jurist,

ART. PAGE

Physician, and General Chemist. By Theo. G. Wormley, M. D., Prof. of Chemistry and Toxicology in Starling Med. Col., Ohio, etc. With seventy-eight illustrations upon steel. 8vo. pp. 668. New York: Baillière Brothers, 1867. 511

XXIV. Chemistry of the Farm and Sea, with other Familiar Chemical Essays. By Jas. R. Nichols, M. D. pp. 123. Boston: A. Williams & Co., 1867. 512

XXV. Eulogium upon the Life, Professional Labours, and Public Services of Joseph Mather Smith, M. D., Late Professor of the Theory and Practice of Physic, and of Materia Medica and Clinical Medicine, in the College of Physicians and Surgeons, New York; Physician to the N. Y. Hospital; President of the Council of Hygiene of the Citizen's Association in the City of New York, President of the N. Y. Academy of Medicine, etc. etc. Delivered before the New York Academy of Medicine, Feb. 6, 1867. By William C. Roberts, M. D. Printed for Private Distribution. 512

XXVI. Surgical Clinic of La Charité; Lessons upon the Diagnosis and Treatment of Surgical Diseases, delivered in the month of August, 1865. By Professor Velpeau; Collected and edited by A. Regnard: reviewed by the Professor; translated by W. C. B. Fifield, M. D. 12mo. pp. 103. Boston: James Campbell, 1866. 513

XXVII. On Malformations of the Human Heart, etc., with original Cases and Illustrations. By Thos. B. Peacock, M. D., F. R. C. P., Physician to St. Thomas's Hospital, etc. Second edition. pp. 204. London: John Churchill & Sons, 1866. 515

XXVIII. Atlas of Surgical and Topographical Anatomy. By B. J. Béraud, Surgeon and Professor to the Maternity Hospital of Paris, etc. etc. Illustrated by one hundred and nine plates, drawn from nature by M. Bion; translated by Robert Thomas Hulme, M. R. C. S., England. 4to., 11 parts. London: H. Baillière, 1867. 519

XXIX. A Practical Treatise on Apoplexy (Cerebral Hemorrhage); its Pathology, Diagnosis, Therapeutics, and Prophylaxis; with an Essay on (so-called) Nervous Apoplexy, on Congestion of the Brain, and Serous Effusion. By William Boyd Mushet, M. B., etc. 8vo. pp. 196. London, 1866. 521

XXX. Da Congestão e Hemorrhagia Cerebral, Pelo Dr. Abel Jordão, Lente na mesma escola. 8vo. pp. 16. Lisboa: 1866.
Cerebral Congestion and Hemorrhage, a clinical Lecture, delivered in the Medical School of Lisbon, Nov. 1864. By Dr. Abel Jordão, a Professor in the School. Lisbon, 1866. 521

XXXI. Notes on Epidemics. For the Use of the Public. By Francis Edmund Anstie, M. D., F. R. C. P., etc. First American Edition, 12mo. pp. 95. J. B. Lippincott & Co. Philadelphia, 1866. 523

XXXII. On Addison's Disease: Clinical Lectures on Addison's Disease, and a report on Diseases of the Supra-Renal Capsules. By Edward Headlam Greenhow, M. D., F. R. C. P., etc. 8vo. pp. 228. London. 1866. 524

XXXIII. On the Principles of Æsthetic Medicine, or the Natural Use of Sensation and Desire in the Maintenance of Health and the Treatment of Disease, as Demonstrated by Induction from the Common Facts of Life. By Joseph P. Catlow, M. R. C. S. 8vo. pp. 325. London, 1867. 525

XXXIV. Diarrhœa and Cholera; their Nature, Origin and Treatment through the agency of the Nervous System. By John Chapman, M. D., M. R. C. P., M. R. C. S. Second Ed., enlarged, 8vo. pp. 248. London, 1866. 525

XXXV. Chemistry. By William Thomas Brande, D. C. L., F. R. S., Alfred Swaine Taylor, M. D., F. R. S., Second American edition, thoroughly revised. 8vo. pp. 764. Philadelphia: Henry C. Lea, 1867. 526

XXXVI. Elements of Human Anatomy; General, Descriptive, and Practical. By T. G. Richardson, M. D., Prof. Anat. in Med. Dep. Univ. Louisiana. Second Ed. Carefully revised and illustrated by nearly 300 engravings. 8vo. pp. 671. Philadelphia: J. B. Lippincott & Co., 1867. 526

QUARTERLY SUMMARY
OF THE
IMPROVEMENTS AND DISCOVERIES IN THE MEDICAL SCIENCES.

FOREIGN INTELLIGENCE.

Anatomy and Physiology.

PAGE
1. Chemistry of the Nerves and Nervous Centres. By O. Liebreich. 527
2. Source of Muscular Energy. By Prof. Fick and Wislicenus. . 527
3. Physiological Relations of Colloid Substances. By Mr. A. Ransome. 528
4. Recent remarks concerning the Sugar of Muscle. By Dr. R. McDonnell. 528
5. Nature of Rigor Mortis. By Dr. R. Norris. 529
6. Action of Anæsthetics on the Blood. By Hermann. . . 529

Materia Medica and General Therapeutics.

7. Report of the Scientific Committee Appointed to Investigate the Physiological and Therapeutical Effects of Hypodermic Method of Injection. . . . 530
8. Physical and Physiological Action of Medicines. By Dr. Wm. Murray. 531
9. Tetrachloride of Carbon as an Anæsthetic. By Mr. T. Nunneley. 533
10. Therapeutic Value of the Different Constituents of Cubebs. By Prof. Bernatzik. . . . 533

Medical Pathology and Special Therapeutics, and Practical Medicine.

11. Pathology of Functional Nervous Disorders. By Dr. C. Handfield Jones. . . . 534
12. On Spectral Illusions of the Senses. By Dr. Robert Paterson. 535
13. Relations of Chorea to Insanity. By M. Thore. . . 535
14. Morbid Anatomy of Tubercle. By MM. Hérard and Cornil. . 536
15. Fatty Embolism. By Meissner. 536
16. Organic change of Structure of the Hair produced by Syphilis. By Mr. Erasmus Wilson. . 537
17. Hypodermic Injections of Sulphate of Quinia in the Treatment of the Fevers of Algeria. By Mr. Jules Arnould. . . 537
18. Strychnia in Epilepsy. By Mr. Walter Tyrrel. . . . 538
19. Seton to Neck in Diabetes. By Dr. Buttura. . . . 539
20. Thermometric Observations in Pneumonia. By Kocher. . . 539
21. The Temperature in Cholera. By Dr. L. Guterbock. . . 539
22. Pleurisy in Children. By Drs. Steiner and Neureutter. . . 539

Surgical Pathology and Therapeutics, and Operative Surgery.

23. Treatment of Incised Wounds with a View to Union by the First Intention. By Prof. Syme. 540
24. New Method of Treating Compound Fracture, Abscess, &c. By Prof. Joseph Lister. . . 541
25. Epiphysary Disjunctions. By Professor R. W. Smith. . . 543
26. Manipulation as a Means of Reducing Dislocations of the Hip, Complicated with Fractures of the Pelvis and other Injury. By Mr. Jos. Bell. . 547
27. Case of Dislocation of the Hip-joint into the Sciatic Notch, reduced by the American Method. By Dr. H. C. Cameron. . . 548
28. Resections. By M. Sedillot. 548

PAGE
29. Sub-periosteal Resections. By M. Laroyenne. 548
30. Section of the Nerves for Neuralgia. By Martini. . . 549
31. Injury of the Head, without Aphasia. By Dr. Piedanna. . 550
32. Spontaneous Fracture of Urinary Calculus in the Bladder. By Mr. G. Southam. . . 550
33. Fatal Hemorrhage from the Gums after Scarification. By Dr. James Young. . . . 551

Ophthalmology.

34. Embolia of one Branch of the Central Artery of the Retina. By Dr. Samisch. . . . 552
35. Tubercular Nodules in Choroid Coat of Eye. By Dr. Conheim. 553
36. Accommodation—Intraocular Pressure. By Volchers and Henson 554
37. Reproduction of the Crystalline Lens. By M. Milliot. . 554
38. Paralysis of the Ocular Branches of the Cervical Sympathetic Nerve. By Mr. Jonathan Hutchinson. . . . 554
39. Remarkable Case of Recovery from an Extensive Incised Wound of the Eyeball. By Dr. Steffan. 555
40. Clinical Report on Herpes Zoster Frontalis seu Ophthalmicus (Shingles affecting the Forehead and Nose). By Mr. J. Hutchinson 556

Midwifery.

41. Quintuple Child-Birth. By Dr. T. W. Sproule. . . . 559
42. Placenta Prævia, Child Delivered through Placenta. By Dr. Gordon. 560
43. Removal of Intra-uterine Polypi. By Sir J. Y. Simpson. . 560
44. Cure of Ovarian Cysts without Operation. By Dr. Courty. 561

Medical Jurisprudence and Toxicology.

45. Poison of the Cobra-di-Capella. By Professor Halford. . . 561
46. Microscopic Toxicology. By Dr. Guy. 562

AMERICAN INTELLIGENCE.

Original Communications.

Recovery of a Still-born Child by means of an Electro-Magnetic Current. By John H. Packard, M. D. 563
Gunshot Wound in the Chest; Successful Excision of Portions of Rib. By J. A. Reagan, M.D. 564
Sub-luxation of the Body of the Sternum. By M. Forster, M.D. 564
Sequel to Case of Laryngeal Polyp. By J. Solis-Cohen, M. D. 565
Puerperal Convulsions successfully treated by Bromide of Potassium. By Jared B. Wood, M. D. 566
Local Anæsthesia in Otalgia. By Charles C. Shoyer, M. D. . . 566
Prolonged Gestation. By P. M. Rivers, M. D. 566
Ossification of the Placenta. By C. B. Galloway, M. D. . . 567

Domestic Summary.

Death from Chloroform on its Third Administration. By Dr. H. A. Dubois. 568
Death from Swallowing Two Ounces of Chloroform. By Dr. D. W. Stormont. 569
Deep Tumours of the Neck; Excision; Ligature of Internal Jugular Vein. By Prof. Greene. 569
Extirpation of the Uterus by Mistake for Ovarian Tumour. By Dr. E. Krakowizer. . . . 570
Propolis as a Remedy for Acute and Chronic Diarrhœa. By Dr. H. O. Hitchcock. . . . 571
Disease of the Supra-Renal Capsules without Discoloration of the Skin. By Dr. J. B. S. Jackson. 571

Miscellaneous Notices.

An Algoid Vegetation the Cause of Syphilis. By Dr. J. H. Salisbury. 571
Sale of Diplomas. . . . 572
Note from Dr. Githens. . . . 572

THE

AMERICAN JOURNAL

OF THE MEDICAL SCIENCES

FOR OCTOBER 1867.

ART. I.—*Vesico-Vaginal Fistula: the Preparatory Treatment and Mode of Operation.* By THOMAS ADDIS EMMET, M. D., Surgeon to the New York State Woman's Hospital, New York.

SINCE the application of the metallic suture to the class of injuries under consideration, and its subsequent general use in obstetrical surgery, scarcely any other branch of our profession has made more progress, with a greater promise for the future. Posterity, regardless of counter claims of priority, will ever intimately associate the name of J. Marion Sims with the use of the metallic suture. It is not my purpose, however, to review at length the labours of Dr. Sims, or the subsequent claims of others who have contributed at home and abroad to the common stock, for they are as "household words" to the operator. But as an explorer in a field almost uniformly unsuccessful, as a demonstrator of the true principles applicable, and as the originator of the necessary instruments which have not been improved, whereby success is now the rule, he can rest his claims with the future. Through his teaching, in a development of the surgical field peculiar to woman, the progressive results have been such as seldom follow the efforts of a single individual, and the subsequent success of others can but confirm his claims.

In this country there are now but few surgeons who have not been successful, for the operation is one of the most certain of success in surgery, provided that the edges of the fistula are properly denuded and secured without undue tension by the metallic suture. This fact is demonstrated by the records of the Woman's Hospital, as, for some years past, with the increased experience of the profession in the mode of operating, but few cases have been admitted to the institution in which the loss of tissue had been so slight that the edges could be approximated without the aid of plastic surgery. It is my purpose to present in detail, from over two hundred successful cases, a selection in illustration of many points of difficulty which would be rarely met with in private practice, but which are of frequent occurrence in so large a school. With the exception of a few cases operated on while I was the assistant surgeon, all have occurred during the past five years in my service as surgeon to the hospital, or in private practice.

As the result of an experience based on some two hundred and fifty cases in my own practice alone, I may state as a principle that scarcely any case is incurable. The operator, however, like an engineer, must fully appreciate the peculiarities of the situation, and make each point available in his defence; and his success will be in proportion to his ingenuity in turning to the best account the peculiar features of each case. Unfortunately, however, in many difficult cases, the patient is either in indigent circumstances or unable to spare the necessary time from her home duties, and, withal, during the many progressive operations so often requisite, the faith of the sufferer, as well as the patience of the operator must often be severely taxed. The soft parts are susceptible of such great modification that it is often impossible for the surgeon to fully anticipate from the first what may be the result of his labours. It is only step by step, as the parts are relieved of tension, that they become moulded to their new condition. A full conception of what may be accomplished can only be formed with the gradual disappearance of the cicatricial tissue, and after a more healthy condition has been brought about by proper treatment. I have had but five cases which I have been obliged to abandon as wholly incurable, not so much in consequence of the actual extent of the injury sustained, as from the excessive obesity which rendered it impossible to bring the parts into view, and from the fact that, through great irritability of the nervous system, they were unable to bear a long operation on the knees, in the position necessary for their case. About fifty patients who have been under treatment in the hospital have returned home for various causes at different stages of their treatment. Many have done so after months of careful preparatory treatment, without waiting for a final operation, being satisfied with their improved condition. Others have done so with my advice, either to recuperate or to await the efforts of nature in bringing about some desirable change in the parts previous to another operation, and a small number for disorderly conduct. These cases are frequently relieved afterwards by an operation at home, and have been placed on record as cases which were discharged incurable from the Woman's Hospital, while the operator did not realize how much had been accomplished for him, and that in many cases the mere closing of the fistula was not difficult after the parts had already been properly prepared.

A vesico-vaginal fistula following parturition may be defined as an opening from sloughing in the bladder, resulting from delay in delivery after impaction has taken place. The exceptions to this rule are those caused by rapid labour, lacerating the neck of the uterus, and extending beyond so as to involve the base, together with lacerations at the neck of the bladder, which sometimes occur on delivery by forceps. The accepted teaching to wait any given length of time after the occurrence of impaction, with the hope that nature may yet accomplish the delivery unaided, is, as a rule, attended with great danger. After a careful review of all the recorded cases admitted to the Woman's Hospital since its foundation (some twelve years ago), I cannot satisfy myself that more than three cases out of the whole number should be regarded as having resulted from instrumental delivery. These were cases of malpractice, and of no value in a statistical point of view. An escape of urine frequently follows immediately after delivery by forceps, but only as a result of the slough, which had already taken place, and at the time partially detached. In accepting the teaching based on so large a record, I believe that, after impaction has occurred, a novice would be likely to do less damage to the soft parts in applying the forceps or using the perforator, if familiar with the mechanism of labour, than in leaving the case to nature, as is frequently done. I have known the greater part of the base of the bladder lost by subsequent sloughing after an impaction of the head for only two hours. And, again, we have cases on record which had been left to nature undelivered from a week to ten days, and one over a week after the head had passed the vulva. It is evident, therefore, that the average duration of labour cannot be taken as a guide, for the injury had actually resulted long before delivery, although the slough may not have been separated for a week or two afterward, as is frequently the case. The only deduction that we can draw from experience is, that the lower the head is left in the pelvis the greater is the danger, and that less than two hours even is sufficient to cause extensive loss of tissue; also, that the amount of injury is by no means in proportion to the length of labour, and that the only safety consists in as rapid delivery as the circumstances of the case will admit.

After treating of the proper means of preparing the patient, the necessary instruments, and the method of operating which has proved most successful in my hands, together with the after-treatment, I shall present a series of cases under the following classifications: 1st. Fistulæ from laceration of the cervix, with or without sloughing, and involving a portion of the base of the bladder; 2d. From the sloughing of some portions or loss of the whole base; 3. Lacerations across the neck of bladder or urethra; 4th. Loss of the entire base of the bladder, the cervix uteri and the urethra.

Unless the greatest care has been given to cleanliness, the sufferer, in a few weeks after receiving the injury, becomes a most loathsome object. From the irritation of the urine, the external organs of generation become excoriated and œdematous, with the same condition extending over the buttocks and down the thighs. The labiæ are frequently the seat of deep ulcerations, and occasionally of abscesses. The mucous membrane of the vagina is in part lost, and the abraded surface rapidly becomes covered at every point with a sabulous or offensive phosphatic deposit from the urine. If the loss of tissue has been extensive, the inverted posterior wall of the bladder protrudes in a semi-strangulated condition, more or less incrusted with the same deposit, and bleeding readily. This deposit will frequently accumulate to such an extent in the vagina that the sufferer becomes unable to walk or even to stand upright without the greatest agony.

This deposit must be carefully removed, so far as possible, by means of a soft sponge, and the raw surface brushed over with a weak solution of nitrate of silver. If, at any point, it cannot be at first removed without causing too much bleeding, the deposit itself must be treated in the same manner, or coated with the solid stick. Warm Sitz baths add greatly to the comfort of the sufferer. The vagina must be washed out several times a day with a large quantity of tepid water. After bathing, it are best for the patient to protect herself by freely anointing the outlet of the vagina, and the neighbouring parts with any simple ointment; the ceratum calaminæ, however, being the best. She must be instructed to wash her napkins thoroughly when saturated with urine, and not simply to dry them for after use. Time and the increased comfort of the patient are gained by judicious attention to such details. About every fifth day, the excoriated surfaces yet unhealed should be protected with the solution of nitrate of silver; and it is necessary frequently to pursue the same general course for many weeks, before the parts can be brought into a perfectly healthy condition. This point is not reached until not only the vaginal walls, but also the hypertrophied and indurated edges of the fistula have attained a natural colour and density. This is the secret of success; but the necessity is rarely appreciated; without it, the most skilfully performed operation is almost certain to fail.

When the proper condition has been brought about, the surgeon may then be able to decide upon some definite plan of procedure for the closing of the fistula. The edges should be seized at opposite points with a tenaculum held in each hand, and the degree of tension judged by an approximation in different directions. If, at any point, the edges do not come readily together, the finger can detect the seat of resistance, while the parts are kept on the stretch by a tenaculum in the other hand. When the bands are comparatively slight, and superficial, or brought well up by traction, it is generally sufficient to divide them with scissors at the time of the operation for closure. But, on the contrary, when the tension is due to more extensive sloughing, or when the cul-de-sac has been destroyed, the parts can seldom be properly freed without more or less hemorrhage as a complication, and it will be necessary to make one or more preparatory operations. Placing the patient on the back, with two fingers of the left hand introduced into the rectum as a guide, and the thumb into the vagina to make counter-pressure, freely snip with a pair of blunt-pointed scissors, point after point, as indicated by the pressure of the thumb. This can be done to any extent without the speculum, and without fear of entering either the rectum or the bladder, if the position of the uterus is recognized, and a proper use is made of the fingers in the rectum as a guide. After opening up the vagina as freely as is deemed prudent at the time, a glass vaginal plug, only just long enough to put the canal well on the stretch, without fear of producing sloughing or pelvic inflammation by too great a length, should be introduced, and secured in place by a T bandage. The instrument has a sufficient rim to prevent it from slipping into the vagina, with a depression to receive the urethra along its course, and to protect it from pressure. This useful instrument was devised by Dr. Sims, and is fully described in his Clinical Notes on Obstetrical Surgery. The hemorrhage is sometimes excessive, but is generally controlled as soon as the plug is introduced; and as the instrument is hollow, it possesses all the advantages of a speculum in exposing the condition beyond. If the blood, however, begins to escape along the sides of the plug, it can be controlled by introducing, with a pair of dressing-forceps, portions of damp cotton along the depression made for the urethra, while rotating the instrument until the outlet of the vagina has been encircled by a tampon and the starting-point regained. It is remarkable how much can be accomplished through the absorbents in a few weeks with judicious pressure exerted by this instrument on cicatricial tissue. Experience has fully demonstrated that the use of the scissors is preferable to that of the knife; with less risk of inflammation and certainly less hemorrhage, cicatricial tissue lacerated or divided by scissors, as we shall show hereafter, does not heal so rapidly, and time is consequently gained to bring about this absorption.

The patient should be lifted into bed and kept there for a week or ten days. Opium should be administered freely, if needed. The urine can be drawn by a catheter, if necessary, without removing the instrument; for, if there has been much hemorrhage, it is not well to remove the speculum until it has become somewhat loosened by the discharge. When it is deemed safe to remove the plug, then large warm water injections with a little castile soap should be continued daily, and oftener if the discharge is profuse. After the parts have been properly healed, if necessary, repeat the operation for enlarging the canal until the object in view has been attained.

Before operating for closing the fistula, the bowels should be thoroughly acted on by a cathartic. A table, some four feet long and three feet in height, covered with several folds of blankets, should be prepared for the operation. The patient should be dressed in a night-gown and drawers, with the abdomen free from any restraint about the waist. It is rarely that any other position is needed than on the left side, with the knees flexed on the abdomen, the body well rolled over on the chest, the left arm turned up over the back, and the head elevated as little as possible. If covered with a sheet, and with drawers, the night-gown of the patient should be slipped up around the waist, so as to protect it from becoming soiled, all of which can be arranged beforehand by a nurse or female attendant. The buttocks must be drawn down to the edge of the table, and a portion of the sheet on which the patient is lying thrown over her, the speculum introduced, and the edges of the sheet properly tucked in between the legs so as to prevent exposure. If Sims' speculum can be properly held by an assistant, it is the best instrument of all others for this operation. A very good substitute, however, is a self-retaining speculum which I have lately perfected so as to answer exceedingly well in a large majority of cases, if the cul-de-sac has not been lost. It withdraws the perineum and elevates the upper labium as is done with Sims' instrument; while for the treatment of uterine disease it now answers every purpose, and brings the cervix in view with the same facility. But I shall always employ his instrument to a great extent from having well-trained nurses accustomed to its use, as well as from its simplicity and the saving of time in adjusting it.

Having decided on the direction for closing the fistula, its edges must be scarified by seizing with a tenaculum the most depending point, and, with a pair of scissors of a proper curve, proceed to remove the inner edge in a continuous strip. It requires but little practice to make this in most cases continuous around the entire fistula to the starting-point; and, if the denuded portion is not of sufficient width, another strip can be removed just outside of it. The scarification should be extended as near the mucous membrane of the bladder as possible, without actually involving it. A number of probang sponges are indispensable, and an active assistant will be able by their means to keep the freshened edges so far free that, unless an unusual hemorrhage takes place, the operator will not be inconvenienced by the bleeding, if scissors have been used for paring the edges. I have for several years confined myself to the use of scissors made with two different curves, and each duplicated in the reverse, so that they may be used with either hand. I may be deemed an enthusiast in my preference for the scissors to the exclusion of the knife. But, although alike practised in the use of both, I am satisfied that with the scissors I can complete the scarification in half the time, that no portion is left undenuded, and that there is less bleeding; for, since confining myself to their use, I have not had either to delay or to abandon an operation, a frequent occurrence formerly with the knife. Sims' tenaculum of the proper size is much smaller than the instrument generally used, and can scarcely be made too delicate if well tempered. My friend, Dr. John G. Perry, Assistant Surgeon to the Woman's Hospital, has devised a barb-pointed tenaculum, which is a most useful instrument, as it prevents the tissue from slipping off when once fairly caught up. In the choice of needles, I prefer that they should be made small, short, and round, with a slight curve near the point, thickest at the eye, and countersunk to receive the thread. These have the advantage of making a punctured wound, which will be perfectly filled by the wire. The needle in general use, however, which is spear pointed, or triangular in shape, with a cutting edge, and of many times the diameter of the wire, frequently causes a troublesome oozing of blood after the sutures are secured, and sometimes a small fistula will remain along its tract, if by chance its course has been too near the bladder. The needle forceps first introduced by Dr. Sims, has not yet been improved upon for the facility with which the short needle can be introduced at any angle and in a confined space. The point of the tenaculum should be introduced toward the fistula, at a convenient distance from its vaginal edge; then, by a rotation of the hand in the opposite direction, the bladder edge of the fistula will be turned out. Introduce the needle behind the tenaculum, bringing out its point just at the bladder surface, and while still grasping it with the forceps, withdraw the tenaculum, pass its hook over the point of the needle to make counterpressure, while it is advanced as far as the forceps will allow, then seize the exposed portion of the needle, and draw it entirely through. On the opposite side, seize the edge of the fistula with the tenaculum, in the same manner, and introduce the needle at a corresponding point, near the bladder surface. As a rule, from four to five sutures should be introduced to the inch, and one or more passed at each extremity beyond the fistula, according to the shape of the angle, the necessity of which will be hereafter demonstrated. The needle should be armed with a short silk loop and tied with a half knot at the eye. As each suture is introduced, it is better to follow at once with the wire, for the silk soon becomes weakened after being saturated with the blood and urine. It is secured by hooking a small portion into the silk loop, mashing it flat at the angle, and giving it one or more turns so that it may not slip. Frequently the strain is too great on the tissues to pull the suture through at a sharp angle; then a shallow, forked instrument, devised by Dr. Sims, is necessary, so that by pushing one portion after another near the point of exit, by the instrument in one hand and the silk loop held in the other, it may cause the wire to follow in the line of introduction. As to the best method of securing the edges of the fistula, I have an unqualified preference for the simple interrupted suture. Dr. Sims, some nine years ago, abandoned his clamp, having demonstrated that the interrupted suture fulfilled every indication, a fact which my experience since has fully confirmed. While Dr. Bozeman's button suture fulfils in his hands all that he claims for it, and gives an elegant finish to the operation, all do not possess his dexterity in its use. I have used it frequently, and with success, after understanding its application, but at the same time I could never satisfy myself that it simplified the operation, or that I could in any case gain a better result by its use than with the simple interrupted suture. When the fistula is a large one, and a number of sutures are required, to save time and some confusion afterward, shorten the suture by drawing it well through, make a small loop in the short end, and pass the long one through it, to be held by the assistant behind the speculum. Dr. Sims has always insisted on the importance of introducing the sutures with great care, so that the points of entrance and exit should be at the same distance from the edges of the fistula. The principle is correct, in order to avoid the approximation of a scarified surface with an opposite portion which has not been denuded, in which case, of course, no union would take place. But, in reality, to introduce the sutures with any such degree of accuracy is almost impossible, even with constant practice, and with the fistula in a favourable position. Within a reasonable limit this great accuracy is unnecessary, if the sutures are properly shouldered at the time of securing them, so that the point of twisting shall be immediately over the line of union. In other words, each end of the suture must be bent flat on itself to the vaginal surface at the point of exit, and at a right angle again just at the edge of the fistula. If this is done with care, and the suture is only twisted up to the angle formed at the edge of the fistula, it is evident that there can be no turning in of either border. It is generally most convenient to secure first the suture nearest the outlet of the vagina. By following up an end from the fistula with a blunt hook or tenaculum, it can be readily disengaged from the others held by the assistant. While the long end is held in the left hand, shorten the loop by traction to about three-quarters of an inch in length; seize the little slip-knot with the twisting forceps, so as to insure by so doing that both ends of the suture are included within its grasp, and cut off the excess of wire. Make sufficient traction to bring the edges of the fistula together, then shoulder properly with the blunt hook each strand, as already described. After introducing the loop within the slit of the shield, bring the forceps and the handle of the former together and twist until the angle formed by the crossing of the two strands of wire is lost just at the edge of the slit in the shield. The surface over which the suture is to be twisted should be properly made with a very thin edge; therefore, when the wire is bent at a right angle over it, by moderate traction, as the two instruments are brought together and the twisting is not carried beyond a given point, it is evident that with ordinary care the edges of the fistula will be only just brought into apposition. The drawing up of the suture with too great traction, and continuing the twisting beyond the proper point so as to strangulate the parts included within the loop, can be the only cause for a metallic suture ever cutting out, if the parts have been properly freed from tension before the operation. As it is very necessary that the suture should lie flat on the vaginal surface, after it has been secured, withdraw the shield and, while still grasping the suture, pass a tenaculum beneath the twisted portion close to the line of the fistula, in order to lift it up; then bend the wire down by moderate traction over the hook used as a fulcrum; withdraw the tenaculum, and press the wire downward near the end in the grasp of the forceps, as the latter is made to bend the wire upward in the opposite direction; cut the wire just at the angle made by pressure of the tenaculum; it will be then found that by thus turning the suture over and making pressure in the middle, as the free end is bent upward in the opposite direction, the suture will lie perfectly flat. The angle where the suture is to be cut off should be made about half an inch from the edge of the closed fistula. When there is room to admit of doing so, it is well to turn every other suture to the opposite side as a guide afterward, when they are to be removed, should any of them become imbedded in the tissues.

After completing the operation, turn the patient gently on the back, introduce a catheter, and, if the urine is discoloured, inject tepid water into the bladder for the purpose of washing out any blood which may have accumulated. To Sims' sigmoid, or self-retaining catheter, we are greatly indebted for success in this operation, as well as for much additional comfort to the patient. It should always be made of block tin, that the curve may be altered to fit each individual case, so as not to touch the fundus of the bladder, yet of sufficient length, on being nicely balanced in the urethra, to lie close up behind the pubes. The patient must lie the greater part of the time on the back, and, if possible, preserve this position until after the sutures have been removed. It will add greatly to her comfort to have a double-inclined plane well padded to support the lower limbs when drawn up, which can be removed from time time to stretch them at full length for a change of position. The support should be open at the ends with a portion of the side removed so as not to interfere with the catheter. We have generally used as a receptacle for the urine a large sized oval bird-bath or cup, such as are placed in cages. The catheter must be removed several times a day for the purpose of cleaning it by forcing a stream of water through it by means of a large syringe, and the patient must be instructed to notice carefully that the urine has a free escape at all times. It is well to have two catheters, so that one may be introduced immediately on the removal of the other to be cleaned. A sufficient quantity of opium should be administered daily to keep the bowels constipated until the sutures are removed, and the diet regulated with a view to this end. The sutures are usually removed from the eighth to the tenth day, by gently elevating each in turn with the forceps, and clipping the nearest side of the loop so that, as the suture is being withdrawn, it still continues to bind the parts until its exit. Twelve hours afterwards, a dose of castor oil should be administered. The catheter should be continued in use for a few days longer, according to circumstances; and, from the fourteenth to the twentieth day, the patient may set up.

I have now reviewed, but only in brief, the general management and mode of operating. To have entered more into detail would have been impossible, without repetition in anticipating many practical points to be hereafter illustrated by cases, which shall be carefully selected with this object in view.

ART. II.—*On the Causes of Death from Chloroform, with an Analysis of the Reported Fatal Cases from the Inhalation of that Agent, and an endeavour to classify them.* By J. C. REEVE, M.D., of Dayton, Ohio.

IN a review of several recent works upon Anæsthesia, which appeared in the January number of this Journal, particular attention was paid to the subject of death under chloroform; the views of authors were examined as to its frequency, some of the circumstances favouring it, and the modes in which it takes place. It was shown to be one of the lessons of experience, that patients labouring under delirium tremens, and persons who are of intemperate habits, are especially liable to accident during anæsthesia; that authorities agree in teaching that when death takes place it is not always in one particular way, but that this powerful agent may exert a fatal influence in several dissimilar modes; a fact which adds at once to the interest and the difficulty of the study of the subject. The doctrine was also advanced and maintained that death under chloroform might be by shock, a profound impression being made upon the ramifications of the par vagum in the lungs by the sudden inspiration of an atmosphere highly charged with the vapour, which, being reflected upon the heart, causes its movements to cease, and the patient is destroyed as suddenly, and in the same manner, as sometimes happens from swallowing rapidly a draught of ice-water or clear spirits, or from a trifling blow upon the epigastrium. It was also stated that considerable evidence could be adduced in support of the view that death may be by shock, the initial impression being made upon the peripheral nerves, as by the surgeon's knife, the patient being at the time in a state of partial anæsthesia. It was further maintained, that although much connected with accidents under chloroform remains yet unexplained, and in the present state of our knowledge is inexplicable, yet that the danger is in great degree preventable; that when irregularity in the action of the remedy shows itself, it can more justly be attributed to irregularity of administration than to any of the other causes which have been advanced for their explanation.

The present paper results from a careful examination of all the reported deaths under chloroform, made to see how far the facts would support these views. The statements had been made, and the doctrines advanced from the general impressions of reading, and had not the numerical and statistical basis which can alone place scientific doctrine upon a sure and safe foundation. In thus looking for facts to substantiate theory, I am aware that I am following a dangerous path, and one that has led many better men into error. All I can say is, that I have exerted my utmost to prevent any influence of the judgment by preconceived opinions; I have tried to present the facts fairly; and, better still, the subject is, fortunately, of such a nature that I can generally place the facts before the reader, so that their bearing upon the question at issue can be seen, and an opportunity thus afforded for the exercise of his own judgment.

As to the number of fatal cases of chloroform inhalation, I have succeeded in collecting one hundred and thirty-three up to the beginning of the present year. This number is much below the sweeping statements of some writers, and will undoubtedly surprise those who have been misled by partisan advocates. One of these, writing in favour of ether, in an American medical journal within the present year, makes the statement that a French author had "ascertained that there had been above two hundred deaths" from chloroform as long ago as 1859; a number which increases to "several hundred" before his brief article closes. Yet the number I have found corresponds very closely with other lists, the time which has elapsed since they were published being taken into account. Snow's work, published in 1858, contained an account of fifty deaths; the *Traité d'Anæsthesie Chirurgicale* of Lallemand, Perrin, and Duroy, the preface of which is dated Dec. 10, 1862, contains seventy-seven; the Report of the Chloroform Committee of the Royal Medico-Chirurgical Society, in 1864, contains one hundred and nine; and Sabarth's work (*Das Chloroform*), dated Wurzburg, July, 1865, has a list of one hundred and nineteen. So slight is the information, however, in regard to some of these, that the author himself admits that it is impossible to say they were really deaths from chloroform, while others are included in which the death only occurred many hours or even days after the inhalation. I cannot hope that I have succeeded in making a complete list; the cases which have occurred since the publication of the above works have been gleaned from the pages of medical journals, and facilities for referring to files of these, and to other sources of information, have not been nearly so abundant as could be desired. This much I have done, however; I have carefully distinguished every case by recording the age and sex of the patient, the time and place of the occurrence of the death, and the authority from which information of it has been derived, so that omissions may hereafter be supplied should any one in the future go over the same ground. If any important items, necessary to identify the case, are not found in the reports, it is because they are not given in the original.

I have omitted from my list one case which has received the high indorsement of the Chloroform Committee. It is No. 90 of that list, and the authority quoted is the *Traité d'Anæsthesie Chirurgicale.* Turning to that work we find it (No. 75, p. 338) to be a case which occurred near Bordeaux, in which the death certainly cannot be ascribed to chloroform upon the evidence presented. It is one in which only a pretence was made of administering the anæsthetic, and is given by Sabarth as an instance of those mysterious deaths which have occasionally occurred just before or during an operation, and which can alone be explained—if capable of explanation at all—by the peculiar emotional condition of the subject at the time. Even the *Traité d'Anæsthesie Chirurgicale* contains an allusion to the case in the introduction to the work as one of this class, and at the close of an enumeration of several similar, which were translated and given in the review alluded to. In view of these facts I could not do otherwise than reject the case as an instance of death from chloroform.[1]

The classification of the cases has been more difficult than their collection. Many of the reports are extremely imperfect, lacking some of the most important items; so frequently is this the case, that cases in which no judgment can be formed as to the mode of death or the part chloroform played in producing it form one of the largest classes. Again, many of the cases belong to more than one class by virtue of presenting several symptoms, common to several of the divisions, and it is difficult to decide where they most justly belong; in all those cases of doubtful nature, as well as throughout the classes which are given as supporting any particular doctrine, so much of the report is quoted as will give the reasons for the decision, and the more important passages are placed in italics.

The classification is an arbitrary one. This much, however, may be urged in favour of it—it has a clinical basis. The chronological order of the cases has been entirely neglected, and could not, indeed, receive any attention under such a plan; and the pathological basis of classification, whether considered in reference to the post-mortem appearances presented by the principal organs, or the sequence of symptoms as bearing upon any particular part of the system at which death commenced, has been considered of less importance than a plan which would unite cases in which danger might be especially apprehended, or, by showing how danger has arisen, lead to its avoidance hereafter.

The following is the classification:—

I. Those cases in which the report is so imperfect that a judgment cannot be formed as to the manner of death, or as to the share chloroform had in producing it.

II. Those cases in which a severe operation was performed, and in which, therefore, chloroform had but a share in producing the fatal result.

III. Cases of death during administration to patients labouring under delirium tremens, or who were hard drinkers.

---

[1] That an opportunity may be afforded for every one to decide the question himself, I translate the case in full:—

"A vigorous man, forty years of age, had his leg crushed by a fall of his horse; syncope took place at the time of the accident. Six to eight hours afterwards, the patient being in a state of shock and of extreme dread, and requiring the surgeons to put him to sleep before amputating, they resolved to make a pretence of administering chloroform. But scarcely had he made four inspirations of chloroform, held at a very great distance (*une très grande distance*) from the nose and mouth, than the circulation and respiration suddenly ceased, and could not be restored."

IV. Cases in which the patient died from shock; *a*, the shock being from sudden inhalation of chloroform vapour too little diluted; *b*, the shock proceeding from the external impression of the surgical procedure.

V. Cases in which some of the conditions of safe administration were neglected.

VI. Cases in which every precaution seems to have been observed and no explanation of the death can be given in the present state of our knowledge.

The first class manifestly needs no comment.

Class I.—*Cases in which the report is so imperfect that a judgment cannot be formed as to the manner of death, or as to the share chloroform had in producing it.*

Case 1. Young woman at Hyderabad. (Snow, p. 135; and *Am. Journ. Med. Sci.*, Oct. 1848, p. 505.)

Case 2. Charles Desnoyers, aged 22, Hôtel Dieu at Lyons. (Snow, p. 135.)

Case 3. Young gentleman from Australia, Dec. 1848. (Snow, p. 136.)

Case 4. Mrs. Jones, Shrewsbury. (Snow, p. 145.)

Case 5. Artilleryman, aged 24, on board ship at Mauritius, Feb. 1850. (Snow, p. 147.)

Case 6. John Holden, Stepney Workhouse, April 1851. (Snow, p. 153.)

Case 7. Elizabeth Hollis, aged 37, Chipping-Norton, Somerset. Oct. 1851. (Snow, p. 157, and *Am. Journ. Med. Sci.*, April, 1852, p. 559.) "As the patient was in a state of extreme debility, it is not quite certain that the chloroform was the sole cause of death." She had inhaled it twice before.

Case 8. Mr. Martin, near Melrose, Scotland, Aug. 10, 1852. (Snow, p. 162.)

Case 9. Young man, aged 19, related Nov. 16, 1853, by Prof. Dumreicher, of Vienna. (Snow, p. 174.) Given for forcible extension of anchylosed knee. Patient "in somewhat feeble health."

Case 10. Woman, aged 40, Hôpital St. Antoine, Paris, 1854. (Snow, p. 176.) During removal of a uterine polypus.

Case 11. W. S. Badger, aged 22, at Mr. Robinson's, Dentist, London, June 30, 1848. (Perrin,[1] p. 257; also *Am. Journ. Med. Sci.*. Oct. 1848, p. 505.) This case is placed by Snow (p. 201) among the "alleged fatal cases," and he gives it as his opinion that death was not caused by the anæsthetic. The chloroform Committee, however, think differently.

Case 12. A sailor, hospital at Hobart Town, Australia. (Perrin, p. 340.)

Case 13. A girl at Epsom. (*Med. Times and Gaz.*, Sept. 4, 1858.) Administered by a dentist; the case therefore very probably belongs to Class V.

Case 14. Ellen Smith, aged 16, Finsbury Place, London. (*Medical Times and Gaz.*, Oct. 31, 1863.)

Case 15. A prisoner at Pentridge, Australia. (*Medical Times and Gaz.*, April 2, 1864.) May this not belong to Class V.? We read that "not more than *half an ounce* had been used!"

---

[1] The references to "Perrin" are to the *Traite d'Anœsthesie Chirurgicale* of Lallemand, Perrin, and Duroy.

CASE 16. Mrs. Ruth, King's College Hospital, June, 1864. (*Medical Times and Gaz.*, July 2, 1864.)

CASE 17. John Downing, aged 15, United Hospital, Bath. (*Medical Times and Gaz.*, Oct. 8, 1864.) Amputation of lower extremity; whether leg or thigh not stated; this case may, therefore, belong to Class II.

CASE 18. A boy, 8 years old, St. Mary's Hospital, London. (Age and sex from Sabarth, p. 91, with reference to *Medical Times and Gaz.*; no report of the case can be found in that journal, but it is evidently the subject of an editorial in the number for Aug. 6, 1864.)

CASE 19. Queen's Hospital, Birmingham. (*Medical Times and Gaz.*, Aug. 27, 1864.) Taken from one of Dr. Richardson's papers on the Medical History of England. Dr. R. says he is "unable to state precisely whether the narcotic or hemorrhage were the cause of death." This case is noteworthy as being the first fatal one found by this gentleman during his visits to English hospitals; one case of death to at least 17,000 administrations. It may belong to Class II.

CASE 20. R. G., aged 33, Devon and Exeter Hospital, 1862. (*Medical Times and Gaz.*, Jan. 7, 1865.)

CASE 21. Pierre Pelletier, aged 33. (*American Medical Times*, Aug. 23, 1862, from *Lancet.*) "Mr. Gant, of Royal Free Hospital, found the heart and lungs extensively diseased."

CASE 22. A boy 7 or 8 years old, Glasgow Infirmary, March, 1850. (Snow, p. 150.)

CASE 23. A case at St. Mary's Hospital, London, Jan. 1866. (*Medical Times and Gaz.*, Jan. 27, 1866.)

CASE 24. A boy named Hughes, Birkenhead, England, Nov. 1866. (*Med. Times and Gaz.*, Nov. 24, 1866.)

CASE 25. Elizabeth Freed, aged 17, Aug. 8, 1862. (*Med. Times and Gaz.*, Aug. 16, 1862.) Patient "had a feeble and fatty heart."

CASE 26. A girl aged 15, Royal Ophthalmic Hospital, May, 1859. (*Med. Times and Gaz.*, June 4, 1859.)

CASE 27. A child aged about 2 years, Liverpool. (*Med. News and Library*, Jan. 1866, from *British Med. Journal*, June 24, 1865.)

CASE 28. A male. Toronto. April 17, 1858. (*Report of Chloroform Com.*, Case No. 60, from *Medical Times*, p. 415.)

CASE 29. A female, aged 45, Barnet, Oct. 16, 1858. (*Report of Chloroform Com.*, Case No. 67.)

CASE 30. A male, under middle age, London Hospital, 1862. (*Report of Chloroform Com.*, Case No. 91.)

CASE 31. A male, aged 33, London, May 17, 1862. (*Report of Chloroform Com.*, Case No. 95.)

CASE 32. Michael Lanahan, aged 40, Bellevue Hospital, New York. (*Report of Chloroform Com.*, Case No. 79.) An ounce and a half used; death after four minutes inhalation, and following a sudden stertorous inhalation, therefore, very probably death by shock.

CASE 33. A young female, Nov. 1862, Bellevue Hospital, New York. (*Report of Chloroform Com.*, Case No. 100.) The reference is to "*Med. Times*, vol. ii. 548," but there is no report of the case there, nor have I been successful in finding a report of either of these two cases in any American journal.

Class II.—*Those cases in which a severe operation was performed, and in which therefore chloroform had but a share in producing the fatal result.*

Case 1. An adult male, Hôpital la Pitie. (Perrin, p. 297.) The patient suffered from an extremely painful hæmorrhoidal tumour, and was afflicted with *aneurism of the aorta;* the danger of administering the anæsthetic with so serious a disease of the circulatory system was fully recognized by the medical men and explained to the patient, and it was only given in compliance with his express wish. This case therefore stands in a measure alone.

Case 2. J. K., 7th Regt. N. Y. Vols., U. S. Hospital, Beverly, N. J. (*Am. Journal Med. Sciences*, Jan. 1865, p. 272.) I place this case here notwithstanding the report expressly states that there was nothing in the appearance of the patient nor any symptom present to contraindicate the administration of chloroform; his leg had been amputated under chloroform on the 28th of September, sloughing had occurred with protrusion of the bones, and a second amputation became necessary; then we are told that "the patient had been under its influence about fifteen minutes when he began to sink," showing that the operation was at least a tedious one. Nothing is said of the amount of hemorrhage, an important point in the case of one who had suffered several weeks from a sloughing wound in a general hospital; it is expressly stated also that "death was not sudden, but came on gradually."

Case 3. Henry Hollingsworth, Manchester Royal Infirmary, Dec. 24th, 1852. (Snow, p. 163.) Operation for removal of malignant tumour of thigh; nothing is said of amount of blood lost, but death took place about five minutes after the operation began.

This class of cases is probably more imperfect in regard to the number reported than any other; to ascribe the death to chloroform has appeared so clearly unjust that operators have abstained from doing so, while the unfortunate result of the operation has undoubtedly in some cases prevented publication of the facts. I know of two cases of this kind; in one ovariotomy was performed, in the other the administration was for extraction of a ball, the patient having tetanic symptoms at the time.

The small number of cases of death which have occurred when chloroform had been administered for capital operations as compared with the large number when it has been given for minor ones is one of the most singular facts connected with the use of the remedy. The first of the above three cases being an entirely exceptional one, and the report of the last being quite imperfect, these should be eliminated; we have then but a single case of death under chloroform during a severe operation here, and Cases 4 and 8 of Class I. and II., making three in all. Surprising as this may appear, it corresponds with the result attained by other investigators of the subject; thus Sansom, in his table of the operations and conditions for which chloroform was administered, gives seven cases only as covering amputation of the thigh and leg, herniotomy and lithotomy; the table of the Chloroform Committee gives "amputations 16," a number which is exceeded by cases of extraction of teeth and removal of toe nail; but neither of these tables expresses more than what the anæsthetic was given "for," whether the death occurred before the operation, which has generally been the case, or during it, they do not state; therefore they cannot be said not to agree with the result given above.

CLASS III.—*Cases of death during administration to patients labouring under delirium tremens, or who were hard drinkers.*

CASE 1. John Shorter, aged 48, St. Thomas Hospital. Oct. 10, 1849. (Snow, p. 143.) The administrator was not a medical man. Snow calls the report of the case a "very confused narrative," and from his remarks upon the quantity of chloroform used the case may possibly belong to Class V.

CASE 2. A sailor, aged 30, St. Thomas Hospital. Oct. 1856. (Snow, p. 190.) The man was of intemperate habits and had had an attack of delirium tremens. Inasmuch as chloroform was administered in the sitting posture, this case might go into Class V.

CASE 3. In a London hospital. (Perrin, p. 315, quoted from a translation in *Gazette Médicale* from *Med. Times and Gazette*, 1856, vol. ii. p. 442.) Dr. Dundas Thompson's name is mentioned in the report, and it is stated that the subject was of bad constitution and presented signs of delirium tremens.

CASE 4. J. P., aged 57, London Hospital, Nov. 7, 1859. (*Med. Times and Gazette*, Nov. 19, 1859.) Fracture of tibia and fibula; anæsthetic administered for furious delirium tremens.

CASE 5. A male, aged 50. (Mr. Nourse, in *Med. Times and Gazette*, Nov. 9, 1861.) The patient's countenance showed the effects of hard drinking. Possibly this case should be placed in Class V.; the chloroform was pushed on rapidly; two drachms given first on a sponge, then forty or fifty minims were added, and we read that "while the vociferation and struggling yet continued some stertor appeared, and the sponge was at once withdrawn. In another minute full stertor came on."

CASE 6. Carroll, aged 42, Northampton Infirmary, Sept. 1860. (*Med. Times and Gazette*, Sept. 29, 1860.) Patient of drinking habits.

CASE 7. J. C., compositor, aged 31. (Dr. Dobbie, in *Med. Times and Gazette*, June 29, 1861.) Administered for threatened relapse of delirium tremens. The case might also go into Class IV. *a;* death followed immediately after several inspirations from a renewed supply of chloroform.

CASE 8. E. R., female, aged 40, University College Hospital. (Snow, p. 170.) "She had been in the habit of drinking pretty freely." She had also suffered from strangulated hernia for two days and a half.

CASE 9. A male, aged 55, King's College Hospital, 1860. (*Report of Chloroform Committee,* Case No. 82.) Very intemperate.

CASE 10. A male, University College Hospital, Dec. 1861. (*Report of Chloroform Committee*, Case No. 89.) To reduce a fractured ankle; "intoxicated;" these are all the particulars given.

CASE 11. A male, aged 28, King's College Hospital, May 16, 1863. (*Report of Chloroform Committee*, Case No. 107.) "Not in good health; intemperate." Four months before had taken chloroform. An inhaler used. Patient "had a sort of tetanic spasm," with opisthotonos, upon which quickly followed cessation of pulse.

The Report of the Chloroform Committee gives two deaths during administration for delirium tremens, and Sansom's table gives four cases under the head of "delirium tremens and mania;" this case of mania will be found in Class V., because the administration was by a non-medical man, and as there are above three cases in which delirium tremens is especially mentioned the agreement is close. The unfavourable influence of intemperate habits has not before been numerically stated, and it is to be regretted that the reports of several of the cases are imperfect.[1]

CLASS IV.—*Cases in which the patient died from shock.*

a. *The shock being from sudden inhalation of chloroform vapour too little diluted.*

The importance of a recognition of such a class of cases as this, if such a class exists, we think will be conceded by every one without a moment's hesitation. The support derived from analogy in favour of the existence of such a class is very strong. We well know that a sudden and powerful impression will produce immediate death, leaving no trace anywhere to show the manner in which the disastrous result was produced; the impression may be purely emotional in nature, as when the announcement of disastrous news overwhelms mind and body together, or it may have a more material source, of which the best known examples are those of a blow on the epigastrium, or a draught of very cold water. In the same manner, it is held, chloroform may produce death by a sudden and profound impression of its undiluted vapour upon the ramifications of the par vagum in the lungs.

This theory as to one mode of death under chloroform will explain occurrences which no other can. There are three striking facts which have rendered difficult a satisfactory explanation of many of these sad events; they are, 1st, chloroform has been safely administered several times to many of the same individuals who have died under its influence; 2d, but a small quantity of the anæsthetic has been used; 3d, death took place very early in the inhalation. These, one or all of them, have proved rocks upon which many beautiful theories have been shipwrecked. Nor are they so infrequent that they can be ignored, or looked upon as merely exceptional events. Quite a large percentage of the deaths have occurred during inhalation for the second, third, or fourth time; while so frequently has it occurred during the early stages of the process that the statement may be made that when a patient is fully under the influence of chloroform, and ready for the operation, one half of whatever danger there may be in anæsthesia has been passed! Thus, according to Sansom's table of the stage at which death occurred, of one hundred and two cases, in fifty it took place before the full effect of the remedy was produced. Now, the acceptance of the theory under consideration will account for many of these early deaths, and show how it may occur in any case, even when all three of the above difficulties are in the way. No matter how many times the patient may have safely inhaled it before; no matter if but a single dose of chloroform have been poured out; no matter if only a brief time has passed since the inhalation began; the only conditions necessary for death to be produced in this way are a few (perhaps but one) deep inspirations of the undiluted vapour of chloroform.

---

[1] I have omitted from this class the case of the soldier of 2d U. S. Dragoons reported by (then) Asst. Surgeon W. A. Hammond, in *American Journal of Medical Sciences*, July, 1858. The tincture of chloroform was used, one part of chloroform to two of alcohol, and was "shown to be very impure." The man was "exceedingly intemperate in his habits."

But do facts sustain the theory? Let us see, and let it be carefully observed how frequently the disaster followed upon a few deep inspirations, or after the addition of a new supply of chloroform to the apparatus.

Case 1. Mad. Labrune, Langres, France, Aug. 23, 1849. (Snow, p. 142; also *Am. Journ. Med. Sci.*, Jan. 1850, p. 258.) Patient a healthy married woman, inhaled chloroform for extraction of a tooth. "Complete insensibility was not produced at the first trial; *more chloroform was placed on the handkerchief, and she drew a full inspiration.* Her countenance *immediately* became pallid, and no pulse could be felt. *She died as if struck by lightning.*" This is a well-marked and striking example of this class of cases.

Case 2. John Atkinson, Melbourne, Australia. (Snow, p. 162.) "I returned to the bed and poured a little more chloroform on the handkerchief; when it was applied to the face, I heard him splutter at the mouth; the chloroform was instantly discontinued, but the patient suddenly expired."

Case 3. Wife of a physician, aged 29, Sept. 8, 1855. (Snow, p. 188.) "Ten minims more chloroform, as I was informed, were put into the inhaler, and the patient, being seated on a sofa, *began to inhale very eagerly*, but had no sooner commenced *than she gave a sudden start*," and she evinced no farther signs of life. *Two* of the conditions for the safe inhalation of chloroform were violated in this case; it was self-administered, and the patient was seated. With all propriety, therefore, it might be placed in Class V., but death was undoubtedly by shock.

Case 4. A young man, aged 24, Hôpital Beaujon. (Perrin, p. 261.) Administered for amputation of the hip-joint; the anterior flap had been formed, and the patient had not lost more than "*une palette*" of blood. He then began to awake, and "a further inhalation of the anæsthetic was ordered; but a quarter of a minute had scarcely elapsed before the respiration became stertorous," and immediately became less frequent, the pulse failed, and the extremities became relaxed. This case may belong to Class II. (See *Am. Journ. Med. Sci.*, Oct. 1848, p. 502.)

Case 5. A female, aged 20, at M. W.'s, dentist. (Perrin, p. 277.) Administered by the dentist, and some four or five attempts had been made to get her sufficiently under the influence for extraction of a tooth; the last time, upon the testimony of a bystander, the dentist added four or five drops more; *after two or three inspirations* "a rattling in the throat was heard, the face became livid," and that was the end. The quantity added to the sponge was undoubtedly more than four or five drops.

Case 6. Wm. Rush, aged 11, near Towcester, Aug. 27, 1858. (*Med. Times and Gaz.*, Sept. 11, 1858.) Several attempts had been made to get the boy under the influence of the anæsthetic; "some six or eight inspirations" seemed finally to carry him into a fit condition for the examination of a diseased toe; then the handkerchief having been placed in the mother's hand, "the patient made two short stertorous inspirations; the chloroform was at once discontinued, but the change from a slight to an extreme condition of anæsthesia became rapidly apparent," the pulse fell, stopped, and all efforts at resuscitation were vain. If this was not a case of death by shock, it belongs to Class V., on account of the rapidity with which the final part of the administration was conducted.

Case 7. Daniel Pheby, aged 8. Ophthalmic Hospital, Moorfields, Oct. 1, 1858. (*Med. Times and Gaz.*, Oct. 8, 1858.) Operation for strabismus commenced; the patient flinching, "*a fresh dose of chloroform was poured upon the lint*, and it was reapplied. *Immediately* after this the boy's face was noticed to become deadly pale, and his pulse had ceased."

Case 8. Susan Harrison, aged 40, United Hospital, Bath, June, 1862. (*Med. Times and Gaz.*, June 28, 1862.) Given for removal of a tumour of lower jaw; death took place during the operation. "The patient was becoming slightly conscious; he therefore poured another drachm on the napkin, which he held to her mouth, *and she took one inspiration*, when he noticed the pulse suddenly stop; in about half a minute she was dead."

Case 9. A young lady, aged 20, Berlin. (Snow, p. 146.) Two different attempts made on the same day to extract a tooth under chloroform; two just previous to the last and fatal administration. The "patient *suddenly* died, *almost at the commencement* of the last attempt to administer chloroform." Administered by a dentist.

Case 10. Mad. W., aged 32, Ulm, June 27, 1852. (Snow, p. 161.) Taken for extraction of a tooth, on a sponge surrounded by a handkerchief. "*After four or five inspirations*, the operator inquired if his patient did not feel a singing in the ears. She replied with a trembling and thick voice. *At the same time* * * * the head and the arms fell—she was dead. The patient's husband said that the time between the inhalation and death was so short that one could scarcely have said yes or no." This is one of the cases so difficult to decide upon the class they should be placed in; as death was most probably by shock it is placed here, while as a striking example of too rapid administration it might, with equal propriety, be placed in Class V.

Case 11. A lady, aged 36, Edinburgh, practice of Dr. Roberts, Surgeon-Dentist. (Snow, p. 189.) The patient had inhaled the anæsthetic four times. Administered on a handkerchief. She had taken only "about nine or ten inspirations, obtaining but a partial influence [?] of a quantity short of ʒiss poured out from the bottle, and inhaling it for a space of time certainly less than a minute, when she said, 'You must not operate until I am quite insensible;' and again, 'I am not over yet;' and immediately, even while speaking, she gave a convulsive start, and with a stertorous inspiration" sank down and died. The mode of administration and the quantity poured out, were both favourable to that sudden influence of the anæsthetic which is termed shock and which has proved disastrous in so many cases, while the early period of the process at which death took place favours this explanation.

Case 12. A man, aged 30, Stockholm. (Snow, p. 148.) "The patient not being sufficiently insensible to undergo the operation with the necessary quietness, *the towel was reapplied*, when, *after a few inspirations*, the pulse suddenly ceased." The administration was rapid; death took place "within five minutes from the commencement of inhalation." Five minutes may not be too brief a period for inducing anæsthesia if the inhalation proceeds regularly and continuously; but in this case there was a good deal of struggling and consequent interruption of the process.

Case 13. Jane Morgan, aged 59, Bristol Infirmary, Jan. 21, 1854. (Snow, p. 175.) "During inhalation a second drachm, in about five minutes from the first, was poured upon the sponge." *Almost immediately* the patient's breathing became stertorous, and *immediately afterwards* her pulse became imperceptible.

Case 14. A male, aged 36, St. Mary's Hospital, Jan. 12, 1862. (*Report of Chloroform Com.*, Case No. 92.) An inhaler used. Operation not commenced. "One drachm of chloroform being insufficient, half a drachm more was added, and *after a few inhalations* the muscles became rigid, and he tried to raise himself in bed, when he suddenly fell back, the pulse stopped," and he was dead.

Case 15. A male, aged 23, London Hospital, Oct. 1862. (*Report of Chloroform Com.*, Case No. 99.) Patient very wasted and debilitated. Given on a piece of lint; "a considerable quantity." "The man moved the limb slightly, and *more chloroform was applied*, when he *suddenly* became deathly pale, and his pulse ceased."

CASE 16. A male, aged 42, London Hospital, Sept. 23, 1863. (*Report of Chloroform Com.*, Case No. 103.) Two drachms given on lint. "*About one minute after the second drachm was applied*, the man struggled and tried to raise himself; the pulse *suddenly* failed," and death followed.

b. *The shock proceeding from the external impression of the surgical procedure.*

Whether there is sufficient evidence to substantiate this mode of death or not, there certainly is enough to awaken the attention of every one interested in the study of the question and of every one much engaged in administering anæsthetics, because if danger may really arise from this source it can be avoided or prevented.

Attention was first called to the probability that death under chloroform might be explained by the depressing effect of the surgical incisions upon the heart's action by Mr. Bickersteth as long ago as 1853. "He relates three instances in which the pulse suddenly ceased on the first incision by the surgeon, and commenced again in a few seconds, the breathing going on naturally all the time. All the three cases were amputation of the thigh."[1] Snow has never observed this change in the heart's action, although he says he has carefully watched for it, and he explains the cardiac irregularity by the direct effect of chloroform, its occurrence being just at the time when anæsthesia is at its height. The next investigator of this subject was M. Vigoroux, who presented his views to the Academy of Sciences. He started from the fact that a painful impression upon the sensitive nerves influences the heart by reflex action in a manner exactly similar to a direct excitation of the par vagum, retarding or even arresting suddenly its movements. He first attempted a solution of the question whether this influence of the external sensory nerves upon the heart's action was exerted during anæsthetic sleep, and decided it in the affirmative. As we have not access to the detail of his experiments we cannot decide how justly this decision was made, but his farther conclusions shake confidence in him entirely; they were that the influence mentioned not only exists *but is augmented*, and that a majority of the deaths under chloroform could be attributed to this cause! M. Perrin,[2] to whom we are chiefly indebted for a knowledge of M. Vigoroux's doctrines, disposes of these assumptions most effectually by calling attention to the number of deaths which has occurred before the operation began—35 out of 65! But M. Perrin investigated the subject for himself, and from reason and the careful examination of eight cases of operation under chloroform, concludes that it is only during the period of partial anæsthesia that this influence of

[1] Snow on Anæsthetics, p. 240.

[2] Traité d'Anæsthesie Chirurgicale, p. 412.

external excitation upon the heart's action manifests itself,[1] while during complete anæsthesia it is abolished. "To admit any reflex action whatever after sensibility to mechanical irritants is abolished would be to admit an effect without a cause."[2] Mr. Bickersteth also expressed his conviction that accident in this way is less likely to occur when the anæsthesia is profound.[3] Mr. Lister saw a patient die when partially under the influence of chloroform, and expresses the opinion that he would have passed safely through the operation had the influence been complete.[4] This, then, brings us to a point at which the doctrine becomes of the highest practical importance; it forces upon us the question, is partial anæsthesia more dangerous than complete? a question beside which the mode of death, simply considered as such, becomes insignificant. In support of the affirmative we have seen that there is considerable respectable authority; we will now give all the facts we can find bearing upon the subject.

Case 1. A man mentioned by Mr. Lister in his article on Chloroform in *Holmes' System of Surgery.* The patient was *but partially* under the influence of the anæsthetic, and died instantly as the knife divided the penis.

Case 2. Mad. Simon, aged 36, June 11, 1852. (Perrin, p. 282.) Patient of general good health, but in a state of great nervous excitement and dread in regard to the extraction of three teeth; administration by an *officier de santé.* "A small quantity of chloroform was poured on a handkerchief, and held near the mouth and nose. She announced almost immediately that she felt the effects of it; the three teeth were rapidly extracted. During this operation, which lasted but an instant, the husband was struck with the alteration of the features of his wife; her face became cadaverous. 'She is dead,' he cried, and, in truth, she had ceased to live." Here the fact that the patient could give expression to the feeling of coming under the influence of the remedy, almost directly before death occurred, is remarkable and difficult to understand; but we must take the report as we find it. Unfortunately the chloroform was administered to the patient while she was seated in a chair, which would bring the case into Class V.

Case 3. Dr. Mailly, Mauritius. (Perrin, p. 336.) Taken for the extraction of a tooth. "The extraction was rapidly made; he betrayed pain by a sudden movement of the head; almost at the same instant convulsive movements of the face, of the arms, and legs followed, and death followed in about five minutes from the operation. Unfortunately again the chloroform was self-administered. Nothing is said of the position of the patient, and the report is very brief.

Case 4. A girl, aged 13, in the practice of Dr. Wüstefeldt of Newstedt. (Snow, p. 174.) The particulars are very meagre; we read, however, that "as soon as insensibility was manifested, the operation was commenced, but *scarcely had the surgeon divided the skin,*" when death took place. Again, the sitting position, so that the case is not a fair example of any one class.

Case 5. Thos. Hayward, aged 23, St. Thomas's Hospital, March 17, 1852. (Snow, p. 158.) In about five to ten minutes the patient was brought under the influence of the anæsthetic, having previously struggled much. "*No sooner had Mr. Lloyd cut the skin than it was stated the pulse had ceased.*" The report expressly states that the pulse was constantly watched by an experienced gentleman.

---

[1] American Journal of the Medical Sciences, January 1867, p. 179.

[2] Traité d'Anæsthesie Chir., p. 413.

[3] Snow, p. 244.

[4] Holmes' System of Surgery, Art. Chloroform.

CASE 6. A soldier, aged 25, Hôtel-Dieu, Orleans. (Snow, p. 165.) "*Scarcely had the incision been made*" when the patient became pale, sank, and "died without any sign of reaction."

We commend the study of the three following cases to those medical men who believe, and act upon the belief, that partial anæsthesia is entirely safe whether they assent to the doctrine that it is more dangerous than complete anæsthesia or not.

CASE 7. A young lady, 17 years of age, Edinburgh. (*Edinburgh Medical Journal*, Jan. 1866.) The patient "had repeatedly taken chloroform before for painless tooth extraction." She was in the recumbent position, and her clothes loose. A small quantity of chloroform was sprinkled on a napkin and the administration commenced. "She had not taken above a very few inhalations when she became violent, struggling and screaming out loudly." Thinking she was unconscious, the dentist took up the forceps, but found the jaws firmly clenched, positive evidence that she was not fully under the influence. "I managed, however, to force them open, applied the forceps and extracted the tooth. I then rose from the side of the sofa, and went to the table, which was scarcely a yard distant, to get a tumbler of water, when I was startled by one or two long gaping respirations. * * * Alarmed, I dashed some cold water over her face, which was deadly pale, examined the pupils, found them greatly dilated, pulled out the tongue, felt for a pulse, but in vain." She was dead.

CASE 8. A male, aged 24, Dreadnought Hospital Ship, Oct. 22, 1859. (*Report of Chloroform Com.*, Case No. 73.) Two and a half drachms given at intervals, on lint, for the application of nitric acid to syphilitic sores. "Anæsthesia imperfect; resisted the application of the acid; struggling suddenly ceased; face pallid; pulse and breathing stopped."

CASE 9. A lady, San Francisco. (*Boston Medical Journal*, May 19, 1864.) The patient was seated in a dentist's chair, and was "much excited" by fear of the instruments. At a period when anæsthesia was manifestly incomplete, as she seized the dentist's hand and removed it from her face, the tooth was extracted; "but the jaws *immediately after* became clenched, and her head thrown back," the breathing was arrested and death rapidly ensued.

CLASS V.—*Cases in which some of the conditions of safe administration were neglected.*

A statement of the conditions deemed essential for the safe administration of anæsthetics should of course precede a detail of the cases which are believed to illustrate this class. They are as follows:—

The chloroform should be pure;

It should be given by a competent person; especially should it not be self-administered;

The patient should not be in the upright position;

The stomach should not be distended with food;

The administration should be slow and gradually progressive, carefully avoiding sudden irregularities; and

It should not be too prolonged before bringing the patient into a condition fit for operation.

These aphorisms are the plain teachings of experience, and their truth is many times illustrated in the history of chloroform accidents, with the exception of the first and the fourth. The following list contains but one instance of each of these; undoubtedly because, as to the first, attention was called to impurity of the article as a probable cause of death at a very early period in its use, and to be careful upon this point is but the plain dictate of common sense; in regard to the stomach distended with food, a moment's consideration would suffice to show the probability that it would exert a deleterious influence by its mechanical interference with free and easy respiration, while experiments with animals verified in a marked manner the teachings of reason.

The last two conditions, depending upon general statements as to time, perhaps demand further explanation. What do "slow and gradual" and "too prolonged" mean in reference to anæsthesia? We here meet with the same difficulty found in attempting to define the period of time at which labour ceases to be natural and becomes "tedious." An absolute rule as to time can scarcely be laid down in reference to processes which vary so much in individuals, as do physiological ones; nevertheless, I believe that a careful study of authorities and experience will lead to the decision that anæsthesia cannot be produced within five minutes without diminishing the chances of safety. It is by no means maintained that anæsthesia produced in this time is certain to entail disaster, but that the chances of meeting with it are very much increased. Anæsthesia is, in this respect, like a railroad train—the risk of accident increases in a geometrical ratio with the increase of speed.

Recognizing the difficulty alluded to of fixing an absolute time, authors have not generally mentioned the number of minutes the process should consume. I believe it to be the great omission of Snow that he did not consider rapidity of administration at all in accounting for death, but saw in too strong vapour the only danger; and he fixes the time for anæsthesia at "about two minutes in infants, three minutes in children, and four or five minutes in adults." Later writers, however, have not failed to recognize this source of peril; and Dr. Sansom, in his excellent Handbook, especially teaches the importance of attention to this point; he fixes upon six minutes as the proper period for the induction of complete anæsthesia. The published experience of another late writer upon the subject bears strongly in favour of the period of time we have fixed. We allude to Dr. Anstie.[1] Although we do not find in his work any time fixed absolutely, we infer from his experiments and observations that four minutes is the time he usually occupies in producing anæsthesia; indeed, in detailing his observations he states that "in twelve cases it was induced in from twenty to thirty seconds earlier than four minutes." Now it is a notable fact that Dr. Anstie has met with "alarming symptoms" under chloroform in a proportion very far beyond the general experience—twenty-one times in 3058 inhalations, or once in every one hundred and forty-five times!

---

[1] Stimulants and Narcotics.

Similar tables we do not possess for comparison, yet it is confidently believed that did alarming symptoms occur in this proportion to practitioners generally, the production of anæsthesia by chloroform would be so lessened in frequency by the fear inspired as to be practically abolished. Attention was called in the review already mentioned to the *quantity* of chloroform used by Dr. Anstie on commencing administration, and in that, it was believed, could be found an explanation of the unusual frequency with which he met with dangerous symptoms. Add now to this *rapidity of inhalation* and the explanation seems clear. At any rate thus stand the facts: a gentleman uses chloroform to begin inhalation in such quantities that the term "freely" may at least justly be applied; he administers it more rapidly than usual, and meets with "alarming symptoms," sometimes barely escaping fatal accident, far more frequently than his medical brethren. Certainly we know nothing better calculated to inspire the young chloroformist with caution than a careful study of Dr. Anstie's work, with its experiments and tables.

I make these remarks in no spirit of unfriendly criticism, but with a full recognition of the originality and high scientific character of the treatise, and of its great practical value as a contribution to the study of this subject.

One other remark ought perhaps to be made in this connection. It is not necessary that blame should attach to the administrator because in a given case the death is believed to have been caused by too rapid administration. It is only within a recent period, as we have seen, that this source of danger is becoming recognized; indeed, during the early years of chloroform rapid administration was inculcated and taught, even by Simpson, as one of the best modes of avoiding accident.

With these preliminary remarks we proceed to give the cases of this most interesting class.

CASE 1. Hannah Greener, aged 15, Wincanton, January 28, 1848. (*Am. Journ. Med. Sci.*, April 1848, p. 558.) The post-mortem examination showed that "the stomach was distended with food." But a more probable cause of the fatal result was the rapidity with which the anæsthetic was administered. The report says: "The whole process of inhalation, operation, venesection, and death *could not*, I should say, *have occupied more than two minutes*."

CASE 2. Mrs. Simmons, aged 35, Cincinnati, Feb. 23d, 1848. (Snow, p. 127, from *Western Lancet*.) Extraction of teeth "at the expiration of *about one minute*." "As the last root came out, which was *about two minutes from the beginning of the inhalation*," her head turned to one side and her pulse ceased to beat. (See *Am. Journ. Med. Sci.*, April, 1849, pp. 388–9.)

CASE 3. Patrick Coyle, March, 1848. (Snow, p. 130, from report of Dr. John C. Warren, in *Am. Journ. Med. Sci.*, April, 1849, pp. 388–9.) "Time of inhalation—*about one minute*. Lapse of time till death—about one minute." "In a moment his pulse, which was full and natural, sank: death." This would seem to entitle the case to a place among those of death by shock from chloroform; but the report is very brief, and in this class the practical lesson of the case is, perhaps, most valuable.

The above are the three first cases of death under chloroform, in regular order.

Case 4. Mad. Stock, aged 30, Boulogne, May, 1848. (Snow, p. 131.) The operation was performed and death took place "in certainly *less than a minute* after the beginning of the operation." Very probably death by shock. (See *Am. Journ. Med. Sci.*, Oct. 1848, p. 502.)

Case 5. James Jones, aged 24, Cavan Infirmary, Ireland, Sept. 20, 1850. (Snow, p. 152.) The anæsthetic effect was produced while the surgeon was examining whether the tourniquet controlled the circulation in the tibial arteries, which "*could not have occupied one minute*—certainly the patient *could not have taken fifteen inspirations.*" Death was very probably by chloroform shock. The patient was in a state of great debility, and suffering from hectic fever.

Case 6. Mad. Simon, aged 36, Strasburg, June 10, 1851. (Snow, p. 154.) "The whole process *did not last a minute.*" Patient was also in the sitting posture; a fact not mentioned in Snow's work.

Case 7. A young man, aged 19, Vienna, Nov. 11, 1853. The inhalation lasted *thirty seconds;* not more than a few seconds previously the patient had spoken, when dangerous symptoms set in and death took place "at the expiration of about a quarter of an hour." The patient was much addicted to onanism.

Case 8. J. Pereira, aged 29, St. José Hospital, Lisbon. (Perrin, p. 335.) The report of this says the administrator "proceeded slowly;" yet towards the close, after relating the progress of the inhalation, the dangerous symptoms, and the death, it says, "*all this occurred in two minutes!*"

Case 9. A woman, aged 56, "but appeared ten years older," Guy's Hospital, Dec. 5, 1854. (Snow, p. 185.) We are compelled to class this with the "too rapid administrations," notwithstanding the place at which it occurred and the eminent men who were concerned in it, from the distinct statement that "as far as could be estimated, the time occupied by inhalation was about *three minutes* in this case."

Case 10. A boy, aged 13, Hôtel-Dieu, Lyons. (Perrin, p. 295.) Given for staphyloraphy. "What space of time separated the commencement of inhalation from the operation? This the surgeon cannot state precisely; *three or four minutes* escaped *at the maximum.*" Besides, the patient was seated.

Case 11. P., female, aged 15, l'Hôpital la Charité, under the care of M. Manec. (Perrin, p. 333.) This was most probably a case of too rapid administration; "*a minute* did not elapse until the period of agitation began. A *second minute* was employed in the evolution of this period;" beyond this no space of time is mentioned, but safety is impossible with so rapid a progress of anæsthesia as this would indicate.

Case 12. John Emanuel Hill, aged 16, Norwich. (*American Med. Times*, Aug. 23, 1862, from *Lancet.*) Administrator not a qualified medical man; moreover, death took place within five minutes from the commencement of inhalation.

Case 13. Ann Stoner, aged 17, King's College Hospital, Aug. 7. 1857. (*Am. Journ. Med. Sci.*, Jan. 1858, p. 288.) The report of this case is imperfect, especially in regard to the period at which death took place. It is placed here because the inhaler was out of order, so as to yield a much larger proportion of vapour than was safe, and because both Snow and Dr. Anstie,[1] who carefully investigated the case, came to the conclusion that death occurred early, before the operation of cauterization was performed. The patient had taken chloroform twice before.

Case 14. Joseph Royer, aged 49, l'Hôpital Saint Louis, Jan. 16, 1859. (Perrin, p. 318.) From *three to five minutes* only elapsed from the commencement of the inhalation to the stage of complete resolution necessary for the reduction of a luxation.

---

[1] See Anstie's Stimulants and Narcotics, Am. ed., p. 323. The author was present when this death occurred.

CASE 15. A female, aged 29, London, April 1, 1863. (*Report of Chloroform Committee*, Case No. 102.) "About one drachm was used." Death took place "in less than *four minutes* from the beginning of inhalation."

CASE 16. Brunoy, grenadier of the 1st Regiment, Hospital Gros-Caillou. (Perrin, p. 316.) The patient suddenly raised himself to a sitting posture and fell back dead. "*Two minutes and a half or three minutes* had scarcely elapsed from the beginning of the inhalation."

CASE 17. A female, aged 16, November 7, 1863. (*Report of Chloroform Com.*, Case No. 106.) Patient was seated in a chair. A very meagre report given.

CASE 18. The son of Dr. de la Harpe, aged 14 or 15, in 1855 or 1856. (*Report of Chloroform Com.*, Case No. 109.) "The patient was seated," which would give the case a place in this class, but there are no farther particulars recorded.

CASE 19. A female, Doncaster, June 9, 1860. (*Report of Chloroform Com.*, Case No. 77.) "Administered by her daughter, aged 10, upon a cloth. In the habit of taking chloroform in this way very frequently, and in enormous doses. Had taken it twice to insensibility on the same day."

In the following case the chloroform was administered by a non-professional person:—

CASE 20. An old woman at a Liverpool workhouse. (*Med. Times and Gaz.*, July 28, 1860.) Administered by the "Governor" for mania.

The following are cases of death from self-administration:—

CASE 21. Charles Ellwood Ashton, aged 19, Notting-hill Dispensary. (*Med. Times, and Gaz.*, Dec. 14, 1861.)

CASE 22. F. Wakefield Skey, M. R. C. S., aged 31; 1863. (*Med. Times and Gaz.*, June 6, 1863.)

CASE 23. Mrs. Gregory, Dundee. (*Med. Times and Gaz.*, August 26, 1865.)

CASE 24. Joseph Toynbee, F. R. S., aged 51; London, 1866. (*Med. Times and Gaz.*, July 14, 1866.)

CASE 25. Dr. Renwick, Alloa, Scotland, January 7, 1860. (*Med. News*, February, 1860, p. 29, from *Lancet*, January 7, 1860, p. 20.)

Thus of seven cases of death from self-inhalation five were medical men.

The statement has been made that there is danger in a too prolonged administration of chloroform before anæsthetizing the patient sufficiently for an operation. The following cases will serve to substantiate this:—

CASE 26. Samuel Bennett, at a Dispensary in Westminster, February 20, 1849. (Snow, p. 141; also *Am. Journ. Med. Sci.*, April, 1849, p. 525.) Half an ounce of chloroform was used in a vain attempt to bring him under its influence. After two hours more was procured, "and *half an ounce* was again applied on a handkerchief!" No wonder death followed! The *quantity* here is more exactly stated than the *time;* it was very large, and shows plainly, as Snow says, "the uncertainty and irregularity of the way in which it was administered." A fair excuse, however, can be found in the early period in the history of anæsthesia at which this occurred.

CASE 27. Mrs. Harrup, aged 45, Sheffield. (Snow, p. 177.) The report of this case opens with the announcement that "chloroform was administered with more than the usual precautions!" Yet we read, "after the inhalation had gone on without any (?) effect for *twenty minutes*, it was thought that possibly different chloroform might succeed. * * * After the inhalation had been conducted with the fresh chloroform about *twenty minutes*" she passed fully under its influence, and death rapidly followed.

Case 28. A farmer, aged 29, Cincinnati, September 25, 1860. (*Cincinnati Lancet and Observer*, October, 1860.) Patient inhaled chloroform from a folded cloth in the recumbent position for an operation on the eyes; it was given "by an assistant sufficiently expert in its use;" the stomach was empty. He inhaled it "*from* 11 *to about* 11½ *o'clock!*" "He took *one and a half ounces* of it without resistance!" The operator in this case has followed his patient to "that undiscovered country" some years ago; the cause of science need not, therefore, suffer on account of sparing the feelings of parties interested.

That death should follow such a use of chloroform as here detailed cannot be surprising. Were there no facts to sustain the proposition, that there is danger in a too prolonged administration of the remedy, reason would surely indicate it. The analogy between the action of anæsthetics and alcohol is very striking, and if a man sit and tipple wine or spirits all night long it would not surely be surprising that when thus charged with intoxicating fluids a small additional draught should send him promptly under the table into a fit of prolonged stupor. Just so with chloroform; if the tissues have become permeated and soaked, as it were, with the potent remedy, what more could be expected than dangerous symptoms from a sudden, although very slight, increase of the dose.

Class VI.—*Cases in which every precaution seems to have been observed, and no explanation of the death can be given in the present state of our knowledge.*

Case 1. John Griffith, aged 31, New York Hospital. (*Am. Journ. Med. Sci.*, April, 1849, p. 386; also Snow, pp. 136–9.) Death took place ten minutes after the inhalation began. The anæsthetic was given on a napkin, and it was a second inhalation.

Case 2. J. Verrier, aged 17, Hôtel-Dieu, Lyons. (Snow, p. 138; also *Am. Journ. Med. Sci.*, April, 1849, p. 527.) The chloroform was dropped on gauze spread over the face.

Case 3. Wm. Bryan, Kingston, Jamaica, January 29, 1850. (Snow, p. 147.) The report of this case is very brief; it seems to have been a very rapid administration. Given on a sponge.

Case 4. Alex. Scott, aged 34, Guy's Hospital, June 1850. (Snow, p. 151.) Given on a napkin.

Case 5. A mulatto, aged 45, Seaman's Hospital, Greenwich, July 8, 1851. (Snow, p. 155.) The chloroform was poured on a linen cloth.

Case 6. Caroline Baker, aged 28, University College Hospital, 1853. (Snow, p. 165.) Administered on lint. The report is very meagre, and the case is placed in this class in deference to the opinion of Mr. Erichsen, who attributed the death to the chloroform before the coroner, but he was not present when the death occurred.

Case 7. A man aged 43, Royal Infirmary, Edinburgh. (Snow, p. 166.) Very probably this case ought to go into Class V., for the report says, "about an ounce of chloroform was used!" It was administered on a handherchief, and this was the third time. Fatty degeneration of the heart.

Case 8. Ann Smith, aged 22, St. Bartholomew's Hospital. (Snow, p. 172.) An inhaler was used; a padded metal cup with valves. The patient was of "dissolute habits." Had been under the influence of chloroform a fortnight previously.

Case 9. Walter Hollis, aged 19, Lock Hospital, London, May, 1854. (Snow, p. 178.) This case presented an interesting peculiarity; artificial representation partially restored the patient so that it was desisted from, and "for upwards of ten minutes the chest continued to fill regularly, and the pulse beat at a rate of from forty to fifty in the minute." Nevertheless respiration and pulse soon ceased simultaneously and could not be restored.

Case 10. A man 65 years of age, Middlesex Hospital, July 13, 1854. (Snow, p. 180.) Snow's inhaler used. "An extreme degree of fatty degeneration of the heart."

Case 11. George Sands, aged 39, University College Hospital, Oct. 11, 1854. (Snow, p. 182.) A second inhalation, from a piece of folded lint, just as the patient was awaking from the first; only "about *two minutes* of the second administration had elapsed when the patient became profoundly insensible and began to snore with a peculiar and very profound stertor;" we cannot but term this, therefore, a rapid administration. The evidence is strong that in this case respiration ceased before the heart's action.

Case 12. John Cannon, aged 40, Royal Ophthalmic Hospital, April 10, 1855. (Snow, p. 189.) Snow's inhaler used.

Case 13. A boy, aged 9, case related by Mr. Paget. (Snow, p. 192.) An inhaler used at first, afterwards the chloroform was poured on cotton wool inclosed in lint.

Case 14. A labourer, aged 35, Liverpool Infirmary, April 5, 1857. Administered on a piece of lint. (*Am. Journ. Med. Sci.*, July, 1857, pp. 273–5.)

Case 15. A young student, in the practice of M. Binz, of Bonn. (Perrin, p. 296.) A very meagre report. The anæsthetic given on a folded handkerchief.

Case 16. A woman, aged about 40, communicated by M. Adolphe Richard, to la Societé de Chirurgie. (Perrin, p. 300.) Administered on a compress. Death may have occurred from shock, for the patient was not observed just at the time it occurred.

Case 17. Lolli, hospital at Pisa, June 1, 1854. (Perrin, p. 304.) Given for reduction of a luxation in "the usual mode employed" at this hospital. The report excites grave suspicions of this being one of the too rapid administrations; it says "*at the end of a minute* the anæsthesia was believed to be complete," but it proved not to be, and more was administered.

Case 18. A man, aged 45, Westminster Hospital, July 18, 1859. (*Med. Times and Gaz.*, July 23, 1859.) The post-mortem examination showed fatty degeneration of the heart in a high degree. An inhaler used; the kind not stated.

Case 19. R. W., aged 28, St. Thomas's Hospital, August 8, 1859. (*Med. Times and Gaz.*, August 20, 1859.) The patient was accustomed to drink freely, being a servant in wine vaults, and it might seem as if the case should be placed in Class III., but, on the 23d of July preceding, he had been anæsthetized for an operation in the foot, which "lasted more than half an hour, during which time he was under chloroform." The time occupied by the fatal inhalation is not mentioned. An inhaler used.

Case 20. Edwin Hambly, aged 8, St. Mary's Hospital, November 6, 1861. (*Med. Times and Gaz.*, Nov. 16, 1861.) A very brief report; the operation was a severe one, being "to remove a great deformity occasioned by a burn of the chin, which had the effect of drawing it down to an unusual degree, and turning the under lip inside out." The report also says, "when death took place the boy was apparently recovering from the effects of the chloroform."

Case 21. L., aged 56, Paris, reported by Dr. Fano. (Perrin, p. 338.) Ad ministered on lint in a rolled sheet of paper. Operation, evulsion of toe-nail, which was completed and patient then found dying; information is lacking as to just when the change took place. Probably this case belongs to Class IV., *b.*

Case 22. John C., aged 32, Newcastle Infirmary, Sept. 3, 1861. (*Med. Times and Gaz.*, Sept. 28, 1861.) The chloroform administered on a fold of bandage to the amount of two drachms. The patient was in a state of great dread and fear, in anticipation of an operation. The coroner's jury ascribed the death "to the united effects of fear, debility, and chloroform."

Case 23. Emma A., aged 38, Guy's Hospital, April 11, 1862. (*Med. Times and Gaz.*, June 28, 1862.) In this case a convulsive seizure, with opisthotonos, was the first sign of danger. Fatty degeneration of the heart present. An inhaler used.

Case 24. Thomas Weight, aged 23, Stroud, England, Oct. 23, 1862. (*Med. Times and Gaz.*, Nov. 1, 1862). Snow's inhaler used.

Case 25. W. L., aged 24, Devon and Exeter Hospital, Nov. 1, 1864. (*Med. Times and Gaz.*, Jan. 7, 1865.) Snow's inhaler used.

Case 26. A boy aged 4½ years, at Berlin. (*Med. Times and Gaz.*, Jan. 6, 1866.) Patient convalescing from a scarlet fever; albuminuria.

Case 27. William Howell, aged 49, Bristol Royal Infirmary, Feb. 12, 1858. (*Am. Journal Med. Sciences,* July, 1858, p. 281, from *British Medical Journal.*) Administered on a hollow sponge.

Case 28. A girl, 7½ years old; communicated by M. Marjolin to the Société de Chirurgie. (Perrin, p. 322.)

Case 29. A gentleman, aged 73, Sept. 15, 1852. (Snow, p. 205.) The patient had inhaled chloroform several times previously. Snow's inhaler was used at the time of death, and Snow himself administered the anæsthetic. He had shown alarming symptoms during and soon after one of the previous inhalations, and was evidently an unfavourable subject. Fatty degeneration of the heart was found after death, wherefore Snow classes it with the "alleged fatal cases;" but the Chloroform Committee, more justly, attribute the death to chloroform.

Case 30. A woman, aged 37, St. George's Hospital, May 11, 1854. (Snow, p. 209.) Snow's inhaler used. Another of Snow's "alleged cases;" yet nothing but the positive statement made in his book that "it was impossible that the patient could have breathed air strongly charged with vapour," prevents me from placing this in Class IV., among the deaths by shock from chloroform. The early period at which it took place, "not more than a minute and a half from the commencement of the inhalation," and the irregular respiration, drawing her breath "by deep catches," point very strongly to this conclusion. The patient was suffering from considerable mental emotion in view of the operation—a state which undoubtedly predisposes to accident with chloroform, but cannot be looked upon as of sufficient influence to determine a fatal result. Snow attributes the death to this cause.

Case 31. A male, aged 30, St. George's Hospital, Sept. 24, 1863. (*Report of Chloroform Committee*, Case No. 104.) An inhaler used.

Case 32. A male, aged 22, Covent Garden, London. (*Report of Chloroform Committee*, Case 108.) Weiss' apparatus used.

Case 33. A young female, Salisbury, England, Nov. 7, 1863. (*Report of Chloroform Committee*, Case No. 105.) About 4½ drachms given on a handkerchief.

This class of cases presents some interesting features worthy of a few moments' consideration. Two-thirds of them occurred under circumstances where it might reasonably be expected that the process of administration would be conducted with every precaution to insure safety, in hospitals or infirmaries under the supervision of experienced men; and for this reason, too, we have fuller and more complete reports of the cases of this class generally than of any other. This class also illustrates the fact that the use of an inhaler does not prevent accident with chloroform; the mode of administration is not mentioned in six cases—but in ten, or one-third of the whole, an inhaler was used; in the others the administration was by means of a piece of lint, handkerchief, or similar means. But in estimating the relative number of deaths with and without an inhaler, it must be borne in mind that the use of the remedy is very far more frequent without any special apparatus than with one. The record of inhalers in the history of anæsthesia is not a very assuring one, with all the ingenuity which has been exercised upon them, and the variety which have been presented claiming especial advantages. Dr. Anstie's experience shows this. In his practice an inhaler was used in more than two-thirds of the cases (about 2200 times out of 3058 administrations), and the frequency with which dangerous symptoms occurred has been already stated. The Report of the Chloroform Committee is upon the same side; of 109 fatal cases, the mode of administration was not stated in 14; of the remaining 95 an inhaler was used in 28. The only respect in which an inhaler presents any advantages over the more common apparatus is in the safeguard it presents against death by shock; the patient is not so liable to get an overwhelming inspiration of strong vapour as when the chloroform is poured on a towel or napkin. But anæsthesia may be conducted too rapidly or carried too profoundly as readily with as without an inhaler, and as much care and attention are necessary with as without the instrument. This statement, I believe, has a solid foundation both of reason and of experience to support it.

These cases have been classed together as those in which no explanation can at present be given as to the cause of death. If disposed to strain the evidence, and make it as favourable as possible for the remedy, a certain number of them, concerning which doubts are appended to the report, would be placed among those where it was not properly administered. In others, with a fair show of probability, the death might be attributed to emotion, as Snow attributes it in Case 30. Then, again, a diseased heart is a prominent feature in some cases. The depressing influence of chloroform upon the heart is well known, and a diseased organ is undoubtedly more liable to submit to this influence than a healthy one, fatty degeneration being a condition so frequently found that it was once looked upon as the sole cause of death. Without doubt both excessive emotion and diseased heart play their part in chloroform accident, and have a share in bringing about the fatal result, but not enough to be considered determining causes. Possibly the influence of the latter may be rated as high as that of intemperate habits.

But there is another feature, not yet commented on, presented by a majority of these cases, which is worthy of note in more than one point of view; I allude to the slow and gradual mode of death—*i. e.*, slow and gradual as compared with the instantaneous "sideration" of death by shock. Either respiration or the circulation declined, rapidly it is true, but not stopping suddenly; or artificial respiration brought about a partial restoration of the natural process—the pulse was restored—when again both functions ceased, and death took place. This was the course of the symptoms in twelve out of the sixteen of the above cases taken from Snow's work, and I limit my reference to this authority because it is more accessible than the other sources. Cases 2, 3, 5, 7, 8, 9, 11, 12, 13, 14, 29, and 30, present this feature more or less strikingly. Case 14 may serve as a sample, and I make some extracts from the report:—

> "I at once felt for the temporal artery, but there was no pulsation, and none detected at the left wrist; the respirations had almost ceased. The head was lowered, cold water was dashed into the face, the abdomen struck with the palm of the hand, and a wet towel was dabbed over the epigastrium. After one or two blows the respirations became better, and seemed good; and in about two minutes a pulse was felt at the wrist. This continued between two and three minutes, the respiration being good. His pulse then began to fail, and in about a minute more the respirations were less. The tongue was seized with a pair of forceps and drawn forwards, and artificial respiration tried, and ammonia held to the nostrils; but he was becoming livid in the face, so the Ready Method was at once adopted, and this produced apparently a few *natural* respirations. But the pulse had gone, and in about two minutes more there was no breathing save artificial."[1]

Death, with such an array of symptoms, although it may be termed sudden, presents a marked contrast to that instantaneous death which takes place when it is produced by shock, and the question naturally presents itself whether the pathology of it is not as radically different as the mode. I believe it is, and that such deaths as these depend upon a profound influence of the remedy upon the nervous centres, either spinal or sympathetic, which preside over or regulate respiration and the heart's action, while death by shock is a true paralysis of the heart. The evidence afforded by those cases in which death was averted by the means used is confirmatory of this view, and certainly no study of chloroform accidents can be complete which does not include the consideration of such cases; many times the flame of life has flickered and declined and apparently disappeared, but has been restored again by persistent artificial respiration, so much so that this process is the acknowledged and standard remedy when dangerous symptoms arise, but it is never efficacious when paralysis of the heart occurs. Dr. Anstie has arrived at the same conclusion from experiment:—

> "I have repeatedly recalled animals to life by means of artificial respiration where there was apparent death by apnœa, and the heart's action had only gradually declined. I have *never once* succeeded in resuscitating an animal

---

[1] Snow, pp. 195, 196.

whose circulation had *suddenly* come to a stand still, simultaneously with, or prior to, the cessation of breathing."[1]

Reading over those cases where death took place in this comparatively gradual manner, and comparing them with those where the patient struggled back into life again, is it possible not to experience the suggestion that the symptoms were produced by an over-dose of the remedy? that the nervous centres were paralyzed by the circulation through them of an altered blood (Sansom), or more probably of the chloroform *per se?* Why in one case the system succeeded in freeing itself of the deleterious influence and in another succumbed to it we may never know, but certainly the resemblance between the two classes of cases, the similarity to the "coming out from under the influence" which occurs in every administration, and the acknowledged efficacy of artificial respiration, all sustain the view. The potency of the remedy and the channel by which it is introduced into the economy must also be taken into the account; none other acts so rapidly, and with none can the passage from safety to danger be made with a shorter step, while the residual air of respiration being charged with the vapour of the anæsthetic carries its influence onwards after external administration has ceased, and, if not kept constantly in view, may exert just that amount of influence necessary to turn the scale which trembles between life and death.

It may be objected that, with these queries and probabilities and possibilities, I have exceeded the limits of scientific inquiry; that we are only concerned with facts. The objection is good, however, only up to the point where facts exist for our consideration; when they fail, the consideration of probabilities and the formation of theories and hypotheses are legitimate. At present we cannot know everything relating to death under chloroform. One mode of studying the subject and one means of obtaining further knowledge is to propose hypotheses. Theories only become injurious in science when they are accepted as ultimate attainments. Undoubtedly too many, perhaps a majority, always treat them thus; but those who have learned wisdom from the history of past progress know they are but the scaffolding upon which a footing is held for the present merely, to be deserted for a higher level so soon as the solid wall of truth has been built up to them.

In conclusion, then, I must again express my conviction that much of the danger from chloroform is preventable, and that, mysterious as death from it may now appear, we shall yet be able to understand and remove the causes of it, unless, happily, the progress of science should give us some other anæsthetic unobjectionable in every respect. We are making visible progress year by year as it is. The Chloroform Committee seems to have classed as equally influential in producing disaster, irregular symptoms and impure chloroform, some peculiarity of constitution on the part of the patient and varying strength of vapour administered. We know now that the first may be practically dismissed from consideration, a pure article being readily attainable and impurity of easy detection; that on the part of the patient intemperate habits, a fatty degeneration of the heart, and great fear or emotion of any kind exercise a deleterious influence, while it is exceedingly improbable whether those hidden and unrecognizable peculiarities of constitution to which these accidents were once attributed have any existence at all; while, on the other hand, it is exceedingly probable that the chief source of danger exists in the administration of the remedy. As to the amount of danger, too, I believe it is just to estimate it as scarcely more than a gentleman runs in stepping in a railroad car to go to his suburban residence, and is far from sufficient to justify us in abandoning a remedy which is the greatest boon ever given to suffering humanity.

---

[1] Narcotics and Stimulants, Am. ed., p. 330.

Art. III.—*Experimental Researches on the Excretion of Urea.* By Theodore Richards Noyes, M. D. An Inaugural Thesis, presented to the Examining Committee and Faculty of the Medical Institution of Yale College, for the Degree of Doctor of Medicine.

The following researches were made while studying volumetric analysis in the chemical laboratory of the Medical Institution of Yale College. With the exception of the observations on sleeping and waking, they were made while pursuing the other studies of the school. They are presented, notwithstanding the impossibility, under such circumstances, of that close attention to detail which perhaps is requisite in observations extending over a few hours only, with the hope that they may add to the store of facts from which the conclusions of science must finally be drawn.

The method employed for the determination of urea was Liebig's—precipitation by a graduated solution of mercuric nitrate. The chlorides were previously estimated by a separate solution of the same reagent, and removed by a graduated solution of argentic nitrate.

Four persons, two males and two females, were selected as subjects of the experiments. Their ages, weight, occupation, etc., were as follows:—

No. 1, male. Age, 25 years; weight, 75.3 kilogrammes; medical student; studying about ten hours per day; walking to and from recitations, about two kilometres daily; always healthy. (The writer.)

No. 2, male. Age, 58 years; weight, 71.6 kilogrammes; occupied in marketing and other household business, keeping him in exercise nearly all day; subject to slight attacks of asthma.[1]

No. 3, female. Age, 49 years; weight, 52.1 kilogrammes; not able to do much work; some nervous debility; head aches on reading; soon exhausted by active exercise.

No. 4, female. Age, 35 years; weight, 61.2 kilogrammes; housekeeper; actively employed; occasional turns of "sick headache."

The diet of all four, for ten or twelve years previously, had been practically a vegetable one, meat being only occasionally used.

These observations extended over a period of four weeks, and were made in the following manner: To ascertain the normal amount of the excretion of each individual, the urea in each urine was determined daily for seven days, the diet being an ordinary mixed one. Being unaccustomed to the habitual use of meat, the proportion of nitrogenous food was not as large as in the diet of those who use it more freely.

The diet for the next seven days consisted exclusively of animal food: meat, fish, milk, eggs, and butter.

During the third week the diet was exclusively vegetable, with the exception of a small quantity of milk used in making bread, and in tea and coffee.

The fourth week, the diet remaining the same as during the third, an additional amount of exercise was taken.

In the four following tables, the results of the analyses are recorded. The first four columns show respectively: first, the *date* of each observation; second, the *persons* experimented upon, who are indicated by the numbers 1, 2, 3, and 4, as above; third, the *amount* of urine excreted in twenty-four hours, given in cubic centimeters; and fourth, its *specific gravity* as determined by the urinometer.

The *total solids* were found by the following rule: The excess over 1000 in the specific gravity is multiplied by the number 2.33, which gives the quantity of solid parts by weight in 1000 parts of urine. We then make the proportion:

1000 c.c. : The quantity discharged : : Ascertained solids in 1000 : x = Total solids.

The *colour* is given by reference to Vogel's scale.[2] The *chlorides* and *urea* are given in grammes. The amount of urea excreted per *kilogramme-weight* of the individual is given in grammes in the last column.

---

[1] About two months after the conclusion of the experiments, he had an attack of hemiplegia.

[2] Analyse des Harns, 4th ed., Wiesbaden, 1863, p. 125, with coloured table.

TABLE I.—*First Week—Mixed Diet.*

Day.	Person. No.	Am't.	Sp. gr.	Total solids.	Colour.	Reaction.	Chlorides.	Urea.	Grms. urea per kilogrm. weight.
		c. c.		grms.			grms.	grms.	
MARCH 25	1	790	1029	53.38	Yellowish-red	Acid	12.64	17.88	.237
	2	2265	1012	63.33	Light yellow	Neutral	16.31	16.82	.235
	3	750	1020	34.95	Reddish-yellow	Acid	9.00	11.77	.226
	4	720	1018	30.20	Yellow	Acid	8.28	10.26	.167
	Mean	1131	1020	45.46	Reddish-yellow	Acid	11.56	14.18	.216
MARCH 26	1	575	1032	42.87	Yellowish-red	Acid	7.94	15.18	.202
	2[1]	1560	1010	36.34	Light yellow	Neutral	10.14	14.11	.197
	3	695	1021	34.01	Reddish-yellow	Acid	7.64	10.49	.201
	4	920	1016	34.30	Yellow	Acid	8.74	12.34	.202
	Mean	937	1020	36.88	Reddish-yellow	Acid	8.61	13.03	.200
MARCH 27	1	665	1030	46.48	Yellowish-red	Acid	9.97	16.89	.224
	2	1445	1011	37.03	Light yellow	Acid	6.79	17.30	.242
	3	660	1023	35.37	Yellowish-red	Acid	8.38	11.06	.212
	4	823	1020	38.35	Yellow	Acid	10.12	11.80	.193
	Mean	898	1021	39.31	Reddish-yellow	Acid	8.81	14.26	.218
MARCH 28	1	855	1027	53.78	Yellowish-red	Acid	11.12	21.63	.287
	2	2275	1009	47.71	Light yellow	Acid	9.78	19.79	.276
	3	930	1019	41.17	Reddish-yellow	Acid	10.42	12.93	.248
	4	913	1018	38.29	Light yellow	Acid	9.59	12.69	.207
	Mean	1243	1018	45.24	Yellow	Acid	10.22	16.76	.255
MARCH 29	1	875	1028	57.09	Yellowish-red	Acid	11.64	24.06	.319
	2	1975	1008	36.81	Light yellow	Acid	8.49	16.99	.237
	3	815	1022	41.78	Reddish-yellow	Acid	10.35	13.53	.259
	4[2]	500	1026	30.29	Yellow	Acid	5.15	15.15	.247
	Mean	1041	1021	41.49	Reddish-yellow	Acid	8.91	17.43	.265
MARCH 30	1	685	1028	44.69	Yellowish-red	Acid	9.93	20.21	.268
	2	2440	1009	51.17	Light yellow	Acid	12.20	18.79	.262
	3[3]	1500	1014	48.93	Reddish-yellow	Acid	14.55	17.25	.331
	4[4]	795	1016	29.63	Reddish-yellow	Acid	5.64	14.11	.230
	Mean	1355	1017	43.61	Reddish-yellow	Acid	10.58	17.59	.273
MARCH 31	1	673	1030	47.04	Yellowish-red	Acid	10.03	19.25	.255
	2	1735	1012	48.51	Light yellow	Acid	10.93	16.83	.235
	3	740	1020	34.48	Yellowish-red	Acid	7.84	13.17	.253
	4	683	1021	33.41	Reddish-yellow	Acid	7.10	13.59	.222
	Mean	958	1021	40.86	Reddish-yellow	Acid	8.98	15.71	.241
Average of the week	1	732	1029	49.33	Yellowish-red	Acid	10.46	19.30	.256
	2	1956	1010	45.84	Light yellow	Acid	10.66	17.23	.241
	3	870	1020	38.67	Reddish-yellow	Acid	9.75	12.88	.247
	4	765	1019	33.49	Yellow	Acid	7.80	12.84	.210
	Mean	1081	1020	41.83	Reddish-yellow	Acid	9.66	15.56	.238

---

[1] Went on an expedition to the sea-shore. Walked about eight kilometres.

[2] Had a severe headache.

[3] Went shopping. Walked about two kilometres, and came home very much tired.

[4] Went shopping. Walked about two kilometres, and came home *not* much tired.

Table II.—*Second Week—Animal Diet.*

Day.	Person. No.	Am't.	Sp. gr.	Total solids.	Colour.	Reaction.	Chlorides.	Urea.	Grms. urea per kilogrm. weight.
		c. c.		grms.			grms.	grms.	
April 1	1	755	1032	56.29	Yellowish-red	Acid	10.04	25.07	.333
	2	1865	1016	69.53	Yellow	Acid	13.24	27.42	.383
	3	905	1023	48.50	Yellowish-red	Acid	19.86	18.91	.363
	4	660	1021	32.29	Reddish-yellow	Acid	6.14	14.06	.229
	Mean	1046	1023	51.65	Reddish-yellow	Acid	9.82	21.36	.327
April 2	1	955	1033	73.43	Yellowish-red	Acid	9.93	42.78	.568
	2[1]	2653	1012	74.18	Light yellow	Acid	16.18	39.00	.545
	3	1015	1023	56.00	Yellowish-red	Acid	11.60	28.95	.556
	4	1158	1023	62.06	Reddish-yellow	Acid	10.42	30.11	.492
	Mean	1453	1023	66.42	Reddish-yellow	Acid	12.03	35.21	.540
April 3	1	1265	1031	91.37	Reddish-yellow	Acid	14.42	54.40	.722
	2	2245	1017	88.92	Yellow	Acid	18.63	45.80	.639
	3	990	1024	55.36	Yellowish-red	Acid	9.31	31.88	.612
	4	1260	1022	64.59	Reddish-yellow	Acid	13.86	32.26	.527
	Mean	1440	1024	75.06	Reddish-yellow	Acid	14.05	41.09	.625
April 4	1	1363	1030	95.27	Yellowish-red	Acid	13.63	57.65	.766
	2	2250	1017	89.12	Yellow	Acid	16.20	49.95	.698
	3	1225	1024	68.50	Yellowish-red	Acid	9.92	40.06	.769
	4[2]	595	1028	38.82	Yellowish-red	Acid	5.89	23.38	.382
	Mean	1358	1025	72.93	Yellowish-red	Acid	11.41	42.76	.654
April 5	1	1120	1029	75.68	Yellowish-red	Acid	10.08	51.52	.684
	2	2105	1019	93.19	Yellow	Acid	15.79	56.20	.785
	3	1420	1021	69.48	Reddish-yellow	Acid	10.22	44.02	.845
	4[3]	780	1027	49.07	Yellowish-red	Acid	6.79	32.60	.532
	Mean	1356	1024	71.85	Reddish-yellow	Acid	10.72	46.08	.712
April 6	1	1165	1029	78.72	Reddish-yellow	Acid	11.88	48.70	.647
	2	2235	1019	98.94	Light yellow	Acid	17.88	46.71	.652
	3	1170	1023	62.70	Reddish-yellow	Acid	8.78	38.38	.737
	4	630	1028	41.10	Reddish-yellow	Acid	6.24	26.40	.431
	Mean	1300	1025	70.37	Reddish-yellow	Acid	11.19	40.05	.617
April 7	1	993	1030	69.41	Yellowish-red	Acid	11.22	44.29	.588
	2	2040	1018	85.55	Light yellow	Acid	17.54	48.96	.684
	3	1050	1022	53.82	Yellowish-red	Acid	7.04	35.60	.683
	4	663	1028	43.25	Reddish-yellow	Acid	6.70	27.32	.446
	Mean	1187	1025	63.01	Reddish-yellow	Acid	10.62	39.04	.600
Average of the week	1	1088	1031	77.17	Yellowish-red	Acid	11.59	46.34	.615
	2	2199	1017	85.63	Yellow	Acid	16.49	44.86	.626
	3	1115	1023	59.19	Yellowish-red	Acid	9.53	34.00	.652
	4	821	1025	47.31	Reddish-yellow	Acid	8.01	26.59	.434
	Mean	1306	1024	67.33	Reddish-yellow	Acid	11.41	37.95	.582
Average of last 4 days of week	1	1163	1029.5	79.77	Yellowish-red	Acid	11.70	50.54	.671
	2	2158	1018	91.70	Yellow	Acid	16.85	50.45	·705
	3	1216	1022.5	63.63	Reddish-yellow	Acid	8.99	39.51	.758
	4	667	1028	43.06	Reddish-yellow	Acid	6.41	27.42	.447
	Mean	1301	1024.5	69.54	Reddish-yellow	Acid	10.99	41.98	.645

---

[1] Went on another expedition to the sea-shore. Walked about eight kilometres.

[2] Indisposed. Fasting.

[3] Shopping nearly all day.

TABLE III.—*Third Week—Vegetable Diet.*

Day.	Person. No.	Am't.	Sp. gr.	Total solids.	Colour.	Reaction.	Chlorides.	Urea.	Grms. urea per kilogrm. weight.
		c. c.		grms.			grms.	grms.	
APRIL 8	1	725	1028	47.30	Yellowish-red	Acid	10.15	26.83	.363
	2	1840	1018	77.17	Light yellow	Acid	19.14	39.01	.562
	3[1]	750	1022	38.45	Yellowish-red	Acid	5.55	25.35	.497
	4	498	1024	27.85	Reddish-yellow	Acid	5.48	16.58	.277
	Mean	953	1023	47.69	Reddish-yellow	Acid	10.08	26.94	.425
APRIL 9	1	588	1028	38.36	Yellowish-red	Faintly acid	8.64	14.35	.194
	2	1375	1017	54.46	Yellow	Faintly acid	13.20	17.05	.245
	3	843	1021	41.25	Yellowish-red	Faintly acid	10.12	18.38	.360
	4[2]	375	1025	21.84	Yellowish-red	Faintly acid	5.40	8.36	.139
	Mean	795	1023	38.98	Yellowish-red	Faintly acid	9.34	14.54	.235
APRIL 10	1	690	1028	45.02	Yellowish-red	Faintly acid	11.18	12.42	.168
	2	2195	1013	66.49	Light yellow	Faintly acid	19.97	15.37	.222
	3	1125	1019	49.80	Reddish-yellow	Faintly acid	14.51	15.30	.300
	4	765	1613	23.17	Yellowish-red	Faintly acid	5.66	6.43	.107
	Mean	1194	1018	46.12	Reddish-yellow	Faintly acid	12.83	12.38	.199
APRIL 11	1	598	1029	40.41	Yellowish-red	Neutral	9.21	10 17	.138
	2	1150	1018	48.23	Reddish yellow	Neutral	10.58	12.08	.174
	3[3]	1610	1015	56.27	Reddish-yellow	Neutral	18.35	15.29	.300
	4[4]	458	1020	21.34	Yellowish-red	Neutral	4.85	6.78	.113
	Mean	954	1021	41.56	Yellowish-red	Neutral	10.75	11.08	.181
APRIL 12	1	968	1023	51.88	Yellowish-red	Faintly acid	13.17	13.75	.186
	2	1475	1015	51.55	Yellow	Faintly acid	12.83	14.09	.203
	3[5]	435	1024	24.33	Yellowish-red	Faintly acid	4.13	8.31	.163
	4[6]	653	1014	21.30	Reddish-yellow	Faintly acid	5.88	6.60	.110
	Mean	883	1019	37.27	Reddish-yellow	Faintly acid	9.00	10.69	.165
APRIL 13	1	655	1028	42.73	Yellowish-red	Faintly acid	10.81	9.96	.135
	2	1258	1017	49.83	Light yellow	Faintly acid	11.57	12.20	.176
	3	583	1022	29.88	Yellowish-red	Faintly acid	6.12	10.67	.209
	4	890	1017	35.25	Yellow	Faintly acid	10.68	7.30	.122
	Mean	846	1021	39.42	Reddish-yellow	Faintly acid	9.85	10.03	.160
APRIL 14	1	765	1026	46.34	Yellowish-red	Faintly acid	11.63	10.48	.142
	2	1385	1018	58.09	Yellow	Faintly acid	12.47	12.88	.185
	3	825	1020	38.45	Reddish-yellow	Faintly acid	10.23	11.55	.226
	4	1193	1012	33.36	Light yellow	Faintly acid	10.26	6.68	.112
	Mean	1042	1019	44.06	Reddish-yellow	Faintly acid	11.15	10.40	.166
Average of the week	1	713	1027	44.58	Yellowish-red	Faintly acid	10.68	13.99	.189
	2	1525	1017	57.97	Yellow	Faintly acid	14.25	17.52	.252
	3	882	1021	39.78	Reddish-yellow	Faintly acid	9.86	14.98	.293
	4	690	1018	26.30	Reddish-yellow	Faintly acid	6.89	8 39	.140
	Mean	953	1020.5	42.16	Reddish-yellow	Faintly acid	10.42	13.72	.217
Average of last 4 days of week	1	746	1026	45.34	Yellowish-red	Faintly acid	11.20	11.09	.150
	2	1317	1017	51.93	Yellow	Faintly acid	11.86	12.81	.185
	3	863	1020	37.23	Yellowish-red	Faintly acid	9.71	11.48	.224
	4	798	1016	27.81	Reddish-yellow	Faintly acid	7.92	6 84	.114
	Mean	931	1020	40.58	Reddish-yellow	Faintly acid	10.18	10.55	.168

[1] Walked out—about two kilometres.

[2] Went shopping.

[3] Nervous headache.

[4] Indisposed.

[5] Weak; kept the bed during the forenoon.

[6] Went shopping.

TABLE IV.—*Fourth Week—Exercise.*

No. 1. Walked daily 5.5 kilometres (3½ miles) in addition to ordinary exercise.
No. 2. Walked daily, averaging 8 kilometres (nearly 5 miles) in addition to ordinary exercise.
No. 3. Walked first and second days of the week only. Then 2.2 kilometres (1 mile 120 rods).
No. 4. Walked daily, averaging 2.2 kilometres (1 mile 120 rods) in addition to ordinary exercise.

Day.	Person. No.	Am't.	Sp. gr.	Total solids.	Colour.	Reaction.	Chlorides.	Urea.	Grms. urea per kilogrm. weight.
		c. c.		grms.			grms	grms.	
APRIL 15	1	985	1022	50.49	Yellowish-red	Neutral	13.89	11.72	.156
	2	1330	1014	43.38	Yellow	Neutral	11.44	11.57	.164
	3	885	1019	39.18	Yellowish-red	Faintly acid	10.44	10.62	.204
	4	785	1020	36.58	Yellow	Faintly acid	10.52	7.93	.130
	Mean	996	1019	42.41	Reddish-yellow	Faintly acid	11.57	10.46	.163
APRIL 16	1	690	1028	45.02	Yellowish-red	Alkaline	11.04	9.66	.129
	2	1025	1015	35.82	Yellow	Faintly acid	8.82	10.76	.153
	3	1010	1019	44.71	Reddish-yellow	Faintly acid	12.52	11.21	.216
	4	775	1017	30.70	Yellow	Faintly acid	8.22	8.29	.136
	Mean	875	1020	39.06	Reddish-yellow	Faintly acid	10.15	9.98	.159
APRIL 17	1	590	1030	41.24	Yellowish-red	Faintly acid	10.03	10.44	.140
	2	2165	1012	60.53	Light yellow	Faintly acid	19.27	16.24	.231
	3	795	1018	33.34	Reddish-yellow	Faintly acid	9.94	9.46	.182
	4	988	1013	29.93	Yellow	Faintly acid	8.10	8.50	.140
	Mean	1135	1018	41.26	Reddish-yellow	Faintly acid	11.83	11.16	.173
APRIL 18	1	765	1029	51.69	Yellowish-red	Neutral	12.85	12.24	.163
	2	2075	1011	53.18	Light yellow	Neutral	16.60	12.87	.183
	3	683	1020	31.83	Yellowish-red	Neutral	9.02	8.61	.166
	4	818	1017	32.40	Yellow	Neutral	8.50	9.33	.153
	Mean	1085	1019	42.27	Reddish-yellow	Neutral	11.74	10.76	.166
APRIL 19	1	670	1030	46.83	Yellowish-red	Neutral	10.72	11.99	.160
	2	1288	1012	36.01	Yellow	Faintly acid	8.50	11.98	.170
	3	555	1022	28.45	Yellowish-red	Faintly acid	6.99	7.77	.150
	4	450	1025	26.21	Reddish-yellow	Faintly acid	5.76	8.51	.140
	Mean	741	1022	34.38	Reddish-yellow	Faintly acid	7.99	10.06	.155
APRIL 20	1	720	1030	50.33	Yellowish-red	Faintly acid	12.96	12.45	.166
	2	1325	1018	55.57	Yellow	Faintly acid	13.25	13.38	.190
	3	780	1021	38.17	Yellowish-red	Faintly acid	10.45	9.52	.183
	4	963	1015	33.66	Yellow	Faintly acid	9.44	8.47	.139
	Mean	947	1021	44.43	Reddish-yellow	Faintly acid	11.53	10.95	.169
APRIL 21	1	565	1031	40.81	Yellowish-red	Acid	9.32	10.96	.146
	2	1510	1016	56.29	Light yellow	Acid	14.80	11.63	.165
	3	860	1020	40.08	Yellowish-red	Acid	10.58	8.17	.157
	4	305	1031	22.03	Yellowish-red	Acid	4.09	7.20	.118
	Mean	810	1024.5	39.80	Reddish-yellow	Acid	9.70	9.49	.147
Average of the week	1	712	1029	46.63	Yellowish-red	Neutral	11.54	11.35	.151
	2	1531	1014	48.68	Yellow	Faintly acid	13.24	12.63	.179
	3	795	1020	36.54	Reddish-yellow	Faintly acid	9.99	9.34	.180
	4	726	1020	30.22	Reddish-yellow	Faintly acid	7.81	8.32	.137
	Mean	941	1021	40.52	Reddish-yellow	Faintly acid	10.64	10.41	.162
Average of last 4 days of week	1	680	1030	47.42	Yellowish-red	Faintly acid	11.46	11.91	.159
	2	1549	1014	50.26	Yellow	Faintly acid	13.29	12.46	.177
	3	720	1021	34.63	Yellowish-red	Faintly acid	9.26	8.52	.164
	4	634	1022	28.57	Reddish-yellow	Faintly acid	6.95	8.38	.138
	Mean	896	1022	40.22	Reddish-yellow	Faintly acid	10.24	10.32	.159

By reference to these tables it will be seen that the full effect of any change in the conditions of the experiment is not reached until the *third* day after the change. For example, at the beginning of the second week the mean daily excretion of urea for the first three days is 21.36—35.21—41.09 grammes, when the full effect of the change in diet is reached. If our conclusions were to be drawn from the first day only, we should have an increase over the average of the first week (15.56 grammes) of 5.80 grammes, 37 per cent., a result manifestly erroneous. Again, if our observations were extended another day, we should put the increase at 19.65 grammes, or 126 per cent., also erroneous. It is only when we take the amount excreted the third day, which is very near the average of the last four days in the week, that we reach the true result, which is an increase of 25.53 grammes or 164 per cent. Hence, no conclusions drawn from experiments on the influence of *food* upon the quantity of urea excreted, would appear to be trustworthy, if the results of the first two or three days are not excluded. I have done this by giving in the tables the average of the last four days in each week.

This fact seems to favour the view of Bischoff as to the origin of urea, viz: that the urea excreted is a measure of the metamorphosis of the tissues. Lehmann, Bidder and Schmidt, and others, have argued for its derivation in part from surplus albuminous matters in the blood, from the fact of the rapid increase of urea excreted when animal food is taken. But, although it is rapid, the increase requires *three days* to reach its maximum. No one will maintain that more than six, eight, or ten hours are required for the complete introduction into the blood of the nitrogenous ingesta. Why, then, should the change to urea be so long delayed, when oxygen is constantly being brought in contact with the albuminous materials?

Wide differences will be noticed between the amounts of urine excreted by the different individuals, with corresponding differences in its specific gravity. This is especially the case with Nos. 1 and 2. The common rule laid down in treatises on the pathology of the urine, that the proportion of urea excreted and the accompanying destructive metamorphosis of tissue are approximately as the specific gravity of a single specimen, evidently lacks foundation, when the variations are as great as in these cases. For example, in the first week, on the 27th of March, the specific gravities in the case of Nos. 1 and 2 were respectively 1030 and 1011. Yet the quantity of urea excreted during twenty-four hours by No. 1, was *less* than that excreted by No. 2! An inspection of the results given in the above tables will show during the whole time but slender foundation for such a rule. The quantity of urine discharged in twenty-four hours by different individuals varies exceedingly, while the amount of urea excreted is a much more constant quantity. Indeed, unless the urine of the entire twenty-four hours is collected and measured, and the calculation is predicated upon this absolute amount, the above rule will, in a large proportion of cases, lead us entirely astray.

In the first week, the period of *mixed diet*, although very wide differences are observed in the quantity and specific gravity of the urine, it will be noticed that the average of both is very near the normal standard; the quantity being 1081 c. c., and the specific gravity 1020.

All four persons lost *weight* during the second week, or period of *animal diet*. The average loss was 1.5 kilogramme.

The *quantity* of urine was increased from 1081 c. c. to 1301 c. c., twenty per cent. The *specific gravity* rose from 1020 to 1024.5. This increase of the sp. gr. is not proportional to the increase of urea, nor is the increase in the quantity of urine a sufficient explanation. The *total solids* were raised from 41.83 grammes to 69.54, an increase of 66 per cent. The *reaction* was strongly acid. The variations in the *chlorides* were not large enough to point to any further cause than accidental changes in the quantity used in the preparation of food. The *urea* was increased from 15.56 grammes to 41.98, a rise of 169 per cent.

It appears that the increased discharge of urea was the sole cause of the rise in the total solids, as will be seen by the following comparison :—

	Mixed Diet.	Animal Diet.	Increase.
Total solids .	41.83 grms.	69.54 grms.	27.71 grms.
Urea . . .	15.56 "	41.98 "	26.42 "

The coincidence in the increase of total solids and urea shows that the other solid constituents of the urine besides urea were not materially affected by the change in diet.

The increase of urea in the different urines was as follows: in that of—

	Mixed Diet.	Animal Diet.	Increase.	
No. 1.	19.30 grms.	50.54 grms.	31.24 grms.	162 per cent.
No. 2.	17.23 "	50.45 "	33.22 "	193 "
No. 3.	12.88 "	39.51 "	26.63 "	207 "
No. 4.	12.84 "	27.42 "	14.58 "	114 "
Mean	15.56 "	41.98 "	26.42 "	169 "

The low rate of increase in the case of No. 4 is partially accounted for by the fact that she found it difficult to eat as heartily as the others of a purely animal diet.

After the second day, a notable quantity of free *uric acid* was deposited from all the urines, showing that, notwithstanding the great increase in urea, a portion of the nitrogenous material introduced into the system failed to reach the highest grade of oxidation.

Constipation and sleeplessness were observed in all the subjects of the experiments. The general symptoms were those of stimulation.

The change from an animal diet to a *vegetable* one produced the following results, as shown by the third table when compared with the second.

The *quantity* of urine fell from 1301 c. c. to 931 c. c., a decrease of 28 per cent. The *specific gravity* fell from 1024.5 to 1020. The *total solids* diminished from 69.54 grammes to 40.58, 42 per cent. The *chlorides* show no variations unaccounted for by their use in cooking. The *urea* fell from 41.98 grammes to 10.55, a diminution of 75 per cent. All gained in *weight*, averaging nearly a kilogramme.

The results of these three weeks, so far as urea is concerned, differ in some important respects from the experiments of C. G. Lehmann upon the same points. "On a well regulated mixed diet," says Lehmann, "I discharged in twenty-four hours 32.5 grammes of urea (I give the mean of fifteen observations); on a purely animal diet, 53.2 grammes (the mean of twelve observations); on a vegetable diet, 22.5 grammes (the mean of twelve observations); and on a non-nitrogenous diet, 15.4 grammes (the mean of three observations)." (*Physiological Chemistry*, Am. ed., Phila., 1855, vol. i. p. 151.)

The difference will be more fully appreciated by directly comparing the observations of Lehmann with mine.

There were excreted on a

	Vegetable Diet.	Mixed Diet.	Animal Diet.
Lehmann .	22.5 grms. urea	32.5 grms.	53.2 grms.
Noyes . .	10.5 " "	15.6 "	42. "

It will be noticed that Lehmann's results, obtained during the vegetable and the mixed diets, show an excretion nearly double mine; but on the animal diet this difference no longer appears. The ratio of increase, however, noticed in my observations, is very much greater than in his. The difference in the amount of urea given in the two series of observations, is partially accounted for by the fact that mine include both sexes.

During the fourth week an additional amount of *exercise* was taken, the vegetable diet being continued. The results obtained are as follows:—

The *quantity* of urine was slightly diminished. The *specific gravity* was a little raised. The *total solids* remained nearly the same. The *chlorides* did not vary materially.

The *urea* of the three who exercised regularly was slightly increased. The three who exercised regularly lost *weight*, one kilogramme each, while No. 3, who remained still the larger portion of the week, gained in weight about a kilogramme. As No. 3 exercised only two days, a statement of the results obtained in her case during this week may be omitted.

The differences observed will be better shown by comparing the last four days of the third week with the whole of the fourth, thus:—

	Vegetable Diet.	Vegetable Diet with Additional Exercise.	
No. 1.	11.09 grms. urea	11.35 grms.	Increase .26 grms.
No. 2.	12.81 " "	12.63 "	Decrease .18 "
No. 4.	6.84 " "	8.32 "	Increase 1.48 "
Mean	10.25 " "	10.77 "	" .52

It will scarcely be safe to draw conclusions with too much rigidity from differences so small as these. In the case of Nos. 1 and 2, they come within the possible errors of analysis by Liebig's method. If these results be regarded as accidental, then we are forced to the conclusion that a moderate amount of exercise does not increase the quantity of urea excreted.[1] But, on the other hand, if they really indicate anything, it is that the proportion of increase and diminution of urea is, roughly, in an inverse ratio to the amount of additional exercise taken. This will be seen by referring to the distances at the head of table IV. Thus, No. 4, who took the least exercise, excreted the greatest additional amount of urea. No. 1, who exercised a medium amount, exhibits a slight increase; while in the urine of No. 2, who took the greatest amount of exercise, the urea is actually diminished!

Another fact is noticeable, viz: the increase is proportional to the fatigue experienced. Thus No. 2, who walked the greatest distance, and whose excretion of urea was diminished, experienced the least fatigue; he has always been accustomed to long walks. No. 1, who walked less and whose urea was slightly increased, was but slightly fatigued, while No. 4, who was generally tired on returning from her walk, showed the greatest increase in the amount excreted.

The question here arises, do not these facts suggest the following important generalization: That strong exercise, carried beyond the point of producing fatigue, may increase the excretion of urea, according to the observations of Lehmann, Hammond, Bischoff, and others; but that exercise within the limit of fatigue, does not materially increase this excretion. In other words, the excretion of urea by the kidneys is a measure, not of the absolute amount of force exerted, but of the amount of disintegration of muscular tissue, which is not commensurate, as maintained by many, with the force generated in the body. Two persons may walk the same distance, or carry the same weight, while the disintegration of muscular tissue and resulting fatigue may vary widely. The muscles being merely the instruments whereby the force evolved in the system is applied to the uses of the individual, they may perform their functions most effectually while undergoing the minimum of destructive metamorphosis. Much light is thrown upon this question by a lecture "On the Source of Muscular Power," delivered by Dr. Edward Frankland, before the Roy. Inst. of Great Britain, June 8, 1866, in which he shows conclusively from experiments made by Fick and Wislicenus in the ascent of the Faulhorn that "scarcely one-fifth of the actual energy required for the work performed could be obtained from the amount of muscle consumed."

The muscles of a hardy, well-nourished man, accustomed to exercise, which derive their main supply of force, as Frankland has shown, from the oxidation of non-nitrogenous materials, would, when exercised to an extent not resulting in fatigue, suffer very little disintegration; precisely as the bearings of a skilfully constructed and well-managed steam-engine would undergo little wear and tear while doing a large amount of work. On the other hand, the muscles of a person whose power of assimilation is weak, and who is unaccustomed to exercise, would be easily broken down by a comparatively slight exertion. A case in point is No. 3 in these experiments. This person is 49 years old, not well nourished, and weighs less than any of the others. Active exercise, as walking, produces excessive fatigue, from the effects of which she does not recover for a day afterward. The first two days of the fourth week she accompanied No. 4, walking each day a little over two kilometres, when she was obliged to relinquish the attempt. She has no organic disease, her suffering being mostly from nervous debility. All recorded experiments show that the amount of urea excreted per kilogramme-weight decreases with the increase of age; consequently the excretion of No. 3 should be less per kilogramme-weight than that of No. 4. Again, all observers agree that females excrete less urea per kilogramme-weight than males. The excretion of No. 3 should, for this reason also, be less than that of Nos. 1 and 2. By reference to the tables we find the average excretion per kilogramme-weight during the four weeks, to be—

---

[1] In accordance with the results of E. Smith (Phil. Trans. 1859) and E. Voit (Untersuchungen, Munich, 1860).

No. 1.	.303	grammes	per kilogramme
No. 2.	.325	"	"
No. 3.	.343	"	"
No. 4.	.230	"	"

No. 3, although a female, the third in point of age, and taking much less exercise than the three others, excreted the largest amount of urea per kilogramme-weight.

More extended experiments, under more favourable conditions than I have been able to secure, are doubtless needed to establish this theory conclusively, but the facts which I have now presented evidently sustain it. I venture to propose it because of its apparent corroboration of the views of Frankland and others concerning the source of muscular power.

After the conclusion of the investigation above narrated, I made a series of experiments upon myself, with a view to determine the effects of *coffee* and of *sleep* on the excretion of urea. At the commencement of these experiments I returned for a week to an ordinary mixed diet, in which, however, the proportion of nitrogenous food was not as large as during the first week of the former series. The same diet was then continued for another week, differing only by the substitution of two cups of strong coffee at every meal for the water previously taken. The results are exhibited in the following table :—

TABLE V.—*Fifth and Sixth Weeks—Coffee.*

	Day.	Am't.	Sp gr.	Total solids.	Colour.	Reaction.	Chlorides.	Urea.	Grms. urea per kilogrm. weight.
MIXED DIET.		c. c.		grms.			grms.	grms.	
	APRIL 22	520	1032	38.77	Yellowish-red	Acid	8.79	12.27	.164
	" 23	600	1031	43.34	Yellowish-red	Acid	8.82	17 58	.234
	" 24	705	1027	44.35	Yellowish-red	Acid	10.93	16.50	.220
	" 25	830	1028	54.14	Yellowish-red	Acid	14.03	16.43	.219
	" 26	755	1030	52.77	Yellowish-red	Acid	14.04	18.35	.215
	" 27	715	1028	46.65	Yellowish-red	Acid	12.30	14 23	.190
	" 28	860	1023	46.09	Yellowish-red	Acid	11.44	13.50	.180
	Mean	712	1028	46.59	Yellowish-red	Acid	11.48	15.55	.207
	Mean of last 4 days	790	1027	49.91	Yellowish-red	Acid	12.95	15.63	.208
COFFEE.	APRIL 29	1155	1018	48.44	Reddish-yellow	Acid	12.47	14.32	.191
	" 30	1060	1018	44.46	Reddish-yellow	Acid	9.54	14.95	.199
	MAY 1	950	1023	50.91	Reddish-yellow	Acid	11.50	17.20	.229
	" 2	765	1030	53.47	Yellowish-red	Acid	10.79	18.36	.245
	" 3	780	1031	56.33	Yellowish-red	Acid	11.23	20.51	.273
	" 4	720	1025	41.94	Yellowish-red	Acid	8.28	16.20	.216
	" 5	700	1028	45.67	Yellowish-red	Acid	10.15	16.45	.219
	Mean	876	1025	48.75	Yellowish-red	Acid	10.57	16.86	.224
	Mean of last 4 days	741	1028	49.35	Yellowish-red	Acid	10.11	17.88	.238

The results of the mixed diet week, agree very nearly with those of the former similar week, with the exception of the urea, which, as less nitrogenous food was taken, is correspondingly diminished. During the first three days the physiological effects of the use of coffee were diuresis, constipation, and partial sleeplessness, with a feeling of exhilaration. On the fourth day the power of the stimulant appears to have spent itself. The diuresis and constipation disappeared, and the usual amount of sleep was obtained for the remainder of the week. The use of coffee does not appear to have altered materially either the *quantity* of the urine, the *specific gravity* or the *total solids*, but the *urea* was increased 14 per cent.

The last experiment was made to determine the influence of *sleep* upon the excretion of urea. For this purpose I divided the day into two periods of twelve hours each, ending at 6 o'clock A. M., and 6 P. M. I arose at 6 A. M., and passed the urine of the night, in which I immediately determined the amount of urea. At 7½ o'clock I ate a weighed amount of food which consisted of—

Potatoes	312 grammes	(11 ounces)
Preserved tomatoes . . .	227 "	(8 ")
Bread	170 "	(6 ")
Butter	57 "	(2 ")
One egg	49 "	(1¾ ")
Water	227 "	(8 ")
Total	1042 "	(36¾ ounces)

After breakfast, the time until 9.45 was occupied in conversation and light reading. At that hour I went to bed and remained there *awake* until 6 P. M., when I arose, emptied the bladder, determined the urea, and at 7½ o'clock repeated identically the morning meal. The time until bedtime was occupied as in the corresponding period in the morning, retiring at the same hour, 9.45, and getting soon to sleep. The two periods were made as nearly alike as possible, with the exception of waking and sleeping. I attempted, however, at the same time to observe the effect of mental exertion by studying hard at calculating the results of the observations during the first four weeks. This I continued during five days of the week. I then tried to relax my mind during the last two days, but found it impossible to do so satisfactorily. The absence of muscular exertion produced activity of mind. I occupied the last two days in reading matter which seemed to require the least exertion. We may, therefore, assume that the time spent in bed during the day was occupied in light reading and study during the whole week. The following table gives the results :—

TABLE VI.—*Seventh Week—Sleep.*

Day.		Am't.	Sp. gr.	Total solids.	Colour.	Reaction.	Chlorides.	Urea.	Grms. urea per kilogrm. weight.
		c. c.		grms.			grms.	grms.	
MAY 6	Night	315	1026	19.08	Yellowish-red	Acid	4.50	7.09	.095
	Day	700	1021	34.25	Yellow	Alkaline	10.92	8.68	.116
" 7	Night	280	1027	17.62	Yellowish-red	Acid	5.10	6.33	.084
	Day	550	1025	32.04	Yellow	Alkaline	10.12	7.76	.104
" 8	Night	270	1031	19.50	Yellowish-red	Acid	5.08	6.29	.084
	Day	550	1028	35.88	Yellow	Alkaline	9.68	8.03	.107
" 9	Night	265	1032	19.76	Yellowish-red	Acid	4.61	6.52	.087
	Day	590	1023	31.62	Yellow	Alkaline	8.67	8.79	.117
" 10	Night	250	1031	18.06	Yellowish-red	Acid	4.30	6.38	.085
	Day	493	1030	34.46	Reddish-yellow	Alkaline	8.58	8.78	.117
" 11	Night	253	1032	18.86	Yellowish-red	Acid	4.68	6.50	.087
	Day	468	1030	32.71	Reddish-yellow	Alkaline	8.19	9.27	.123
" 12	Night	270	1033	20.78	Yellowish-red	Acid	4.94	6.83	.091
	Day	470	1030	32.85	Reddish-yellow	Alkaline	8.08	8.98	.120
Mean of night		272	1030	19.09	Yellowish-red	Acid	4.74	6.56	.085
Mean of day		546	1027	33.40	Yellow	Alkaline	9.18	8.61	.115
Daily average		818	1028.5	52.49	Reddish-yellow	Acid	13.92	15.17	.200

The first point noticed is that the *quantity* of urine passed during the day is almost exactly double that passed during the night. This occurred with remarkable regularity. The *specific gravity* was not as much diminished during the day as might be expected, especially during the last three days. This is perhaps accounted for by an increased discharge of phosphates.

The *total solids* of the day exceed those of the night by 70 per cent.

The *reaction* of the night urine was constantly strongly acid, and that of the day urine as distinctly alkaline. This effect cannot be ascribed to the influence of food, as has been done by Bence Jones, Vogel, and others. In the absence of positive proof by a determination of the phosphates, the probability seems very great that the alkalinity during the day was produced by an excess of alkaline phosphates, caused by activity of the brain and nervous system. Dr. Hassall, in his work on the urine, after quoting the experiments of Roberts, Bence Jones, and Weber, the former of whom ascribes the alkalinity of the urine during the day to the "direct" influence of food, and the acidity in the night to its "remote" effect, says, referring to an experiment by Weber:—

> "It is not stated of what the tea consisted, but the increase of acidity after that meal may possibly admit of explanation by reference to its composition. If this meal was a light one only, then the effect of the dinner having passed away, the urine would naturally assume the acidity, the result of the remote effect of the food consumed: again, the diminution of the acidity in the morning, when no breakfast was taken, might merely show that the remote effect of food in increasing the acidity of the urine had reached its limit and was passing away, and the same explanation would apply to the reduction of acidity noticed when no dinner was taken. These explanations, if correct, have at least the effect of reconciling more closely the results of the experiments of Roberts and Weber; if incorrect, we appear driven to the conclusion that, independent of food, the night urine is more acid than that passed during the day, a conclusion, in the present state of the inquiry, by no means warranted. Dr. Roberts, however, records this curious observation: a supper of milk and bread with a pint of ale, had not the effect of lowering the acidity of the night urine. How is this result to be explained? Is it due to the fact that the secondary effect overpowered the immediate effect, and so the urine retained its usual acidity?" (*The Urine in Health and Disease*, 2d ed., London, 1863, p. 251.)

The results of my experiments do not confirm the theory of the remote effects of food; for, why should these remote effects operate in one-half of the twenty-four hours, and not in the other half, the two portions of the day being precisely alike as regards food? Is it not a better explanation to assume that the causes of acidity were operating in both periods, and that the great increase of alkaline phosphates in the daytime overbalanced the acid reaction thus produced?

The variations of *chlorides* excreted in the two periods are almost exactly proportional to the quantity of fluid discharged.

No very reliable experiments to determine the influence of sleep on the excretion of *urea* have been recorded. The subject presents many difficulties. Böcker's experiments (quoted by Dr. Parkes in his *Composition of the Urine*, p. 90) show a remarkable increase, amounting to 50 per cent., which he attributes to the effects of sleep. Dr. Parkes thinks "some unnoticed source of variation must have been acting." By the conditions which I adopted in my experiments, the principal sources of variation, with the exception of the influence of mental exertion, were, I think, eliminated. And my results prove that the excretion of urea during the day *exceeded that in the night by* 31 *per cent.*, the amounts for the two periods being respectively 8.61, and 6.56 grammes. Now, although we may admit that the influence of mental exertion is considerable, yet we cannot suppose that its absence would have reduced the mean amount of urea excreted during the day from 8.61 to 4.37 grammes, a result necessary if the quantity of urea discharged in the night is to exceed it by 50 per cent. Moreover, such a result would reduce the mean excretion of twenty-four hours to 10.93 grammes, an amount below the mean, even of the week of vegetable diet.

In conclusion, I would express my obligation to Prof. Geo. F. Barker, for assistance, and many valuable suggestions during the prosecution of the above research in his laboratory.

ART. IV.—*Remarks on the Structure, Functions, and Classification of the Parent Gland Cells, with Microscopic Investigations relative to the Causes of the several varieties of Rheumatism, and Directions for their Treatment.* By J. H. SALISBURY, M. D., Prof. of Histology, Physiology, and Cell Pathology in Charity Hospital Medical College, Cleveland, Ohio. (With nine figures.)

THE simplest form of a gland is a parent cell, each one performing glandular functions. Hence every parent cell may be called a parent gland cell. So long as the parent gland cells organize normal products, in the normal quantity, no such pathological state as rheumatism can occur. As soon, however, as those normal conditions are disturbed, the physiological balance is deranged, and pathological states arise, at first functional, but which, if long enough continued, tend to organic changes. All are more or less constantly exposed to conditions which have a tendency to disturb the physiological functions.

But little control can be exerted over the cell elements and the filamentous tissues formed by the metamorphosis of these cells, after they have been organized and have escaped from under the influence of the parent gland cells. It is upon the parent gland cells that all healthy and diseased impressions are made; and it is to these cells we must look for causes of diseased states; and to them we must address our remedial agents if we expect to remove the causes of pathological derangements. Very frequently, when a case comes under the observation of a physician, the primary causes of disease have ceased, and he has only to do with the resulting disturbance, which then, to all intents, is the specific cause. If, however, the primary causes are still in action, these should be first removed, and then the diseased states of the gland cells sought out, and means resorted to calculated directly to restore the healthy functions.

There are six types of parent gland cells in the human body. These organize all the tissues, products and elements of the system. The parent cells are more or less permanent organisms. These are:—

1. *The parent epithelial gland cell.*—This cell is either spheroidal, polyhedral, irregular, pavement, columnar, or ciliated. This type of cell organizes all the cells and all the products of epithelial tissue; it is extravascular, and rests upon and outside of the so-called basement membrane. This cell in the milk gland organizes and eliminates milk; in the sudoriferous gland, sweat; in the sebaceous follicles, sebaceous matter; in the ceruminous gland, cerumen; in the plane surfaces, pigmentary matter and products to be eliminated; in the hair follicles it organizes hair; in the salivary glands, salivary cells and fluid, and the resulting products; in the mucous follicles, mucus; in the gastric glands, gastric juice; in the pepsin glands, pepsin; in the epithelial portion of the liver, bile; in the pancreas, the pancreatic secretion for emulsifying fats; in the glands of Brunner and Lieberkühn, the products for digesting mainly farinaceous food; those covering the villi feed upon and transmit digested materials to the more highly animalized gland cells inside the basement membrane, &c. &c.

2. *The parent fibrin gland cell*, which is usually more or less fusiform in shape, and which lines the red and white blood apparatus. This organizes all the products of blood and striated voluntary muscle. It feeds upon albuminous products and organizes them into fibrin.

3. *The parent involuntary muscular fibre gland cell*, which organizes the involuntary muscle.

4. *The parent connective tissue gland cell*, which is situated inside the basement membrane, and outside of the parent cell layer that lines the red and white blood apparatus. This is the cell that organizes all those products and tissues the distinguishing proximate principles of which are either gelatin, chondrin, or osteine. From this cell emanates connective tissue, cartilage, and bone. It organizes those tissues which constitute the cords, bands, trabeculæ, tendons, fasciæ and membranes that tie together and envelop and support organs and tissues, and those which constitute the substantial osseous framework of the body. This cell is disseminated through all portions of the connective tissue; occurs abundantly in the inner portions of the periosteal and perichondrial membranes, and is transformed there into cartilage and bone cells.

5. *The parent voluntary nerve gland cell* occupies the gray portions of the voluntary nerve apparatus, and is either simple, monopolar, bipolar, tripolar, quadripolar, &c. It is the office of this cell to, so far as known, organize the voluntary nerves and their products.

6. *The parent sympathetic nerve gland cell*, which organizes the sympathetic nerve filaments and their products.

The parent involuntary muscle gland cell and the parent sympathetic nerve gland cell are intimately connected in their relations and functions.

The one is presided over by the other. The parent fibrin gland cell, or the cell that organizes the products of blood and voluntary muscle, and the parent voluntary nerve gland cell, are also intimately connected in their relations and functions.

In health, these various gland cells organize those products only which are required for the building up of the healthy tissues, and those products to be eliminated, which are incidental to the organization of healthy tissue elements. The products to be eliminated in health are all soluble in the secretions, and are readily carried off.

If, through any derangement in the functions of the parent gland cells, they fail to form sufficient liquid to keep in solution the products to be eliminated; or if the eliminated matters be in too great proportion to be kept in solution by the liquids eliminated, some of the former accumulate in the system and produce systemic or constitutional disturbance. Each individual parent gland cell has all the elements of an independent organism, possessing a vitality independent of that of the systemic life. Each cell feeds, digests its food, assimilates it, grows, organizes, and eliminates.

In their normal condition, the parent cells organize those cells and filamentous and other products that are needed for the physiological tissues.

When their food is imperfect, their processes of digestion, assimilation, and organization become deranged, and pathological products are the result. These pathological products vary with the varying conditions. Under certain diseased states lithic acid and the lithates are formed in too great a quantity to be kept in solution by the eliminated fluids, and hence they accumulate in certain tissues.

Under other pathological conditions, oxalate of lime is formed, which being for the most part insoluble in the fluids eliminated, accumulates, first in the tissue in which it is formed, and later, if the diseased state continues, it extends to the other parent gland cells and tissues, and finally the entire organism becomes loaded with this salt. In still other pathological states, cystine, another insoluble body, is formed by the parent gland cell; and this like oxalate of lime, not being soluble in the fluids eliminated, gradually accumulates in the gland cells and tissues.

Under other abnormal states the phosphates of the alkalies and alkaline earths are formed and gradually accumulate, as in the cases of cystine and oxalate of lime.

Under still other conditions, two, more, or all of the pathological states previously mentioned may be present, under which circumstances we may have the two, more, or all of the specific states united. Now these are precisely the conditions that develop the causes of rheumatism. It will be seen that these causes are several; and that each is specific and must produce a peculiar type of the disease, requiring special treatment.

Rheumatism does not always arise from the same cause, nor is it amenable in all its varieties to the same kind of treatment. The term *rheuma-*

tism should be the generic name of a number of pathological conditions, each one of which has a distinct cause, possessing specific characters.

We may have four or more types of rheumatism, which may be designated as follows: 1st, Lithic; 2d, Oxalic; 3d, Cystinic; 4th, Phosphatic.

With these few prefatory remarks, we will proceed to briefly describe the various types of rheumatism, with their treatment.

1. *Lithic Rheumatism.*—The *symptoms* may be divided into those of the incubative, the acute, and the chronic stages.

In the *incubative stage*, which may continue for a longer or shorter time, the complexion is noticed to become sallow, the eyes heavy and dull, and somewhat dingy or yellow. A feeling of lethargy and languor is present, and there is a disposition to fall asleep during the day, if not actively occupied; the appetite diminishes and the tongue is more or less coated. The urine gradually becomes coloured with biliary matter, lessened in quantity, and loaded with lithic acid and the lithates. The bowels are sluggish; the portal system more or less congested, and the feces full of uric acid and urates. The saliva is scanty, sticky, and frothy; the mucous membranes abnormally dry; the sudoriferous and sebaceous glands less active than in health, and the skin either furfuraceous or covered with a clammy moisture, having an acid odour. Sudden changes in weather produce wandering pains, and over-exertion imparts an unusually tired feeling to the extremities, back, and chest. The blood generally becomes ropy, and the colourless and coloured corpuscles plastic and adhesive, the former tending to adhere together in groups, forming masses too large to circulate freely through the capillary system of the firmer tissues. In it also occur the spores and filaments of a minute algoid vegetation. Sensations of chilliness and flashes of heat alternate and are frequently present. In this condition the patient on any severe exposure to cold or damp, or to sudden meteorological changes, or to over-fatigue, may be suddenly attacked with most intense suffering in one or more joints, or in all parts of the body. This is the ushering in of the acute stage.

The *acute stage* is ushered in by a well-marked chill, followed by fever. The duration of the chill is from a few minutes to an hour or more. The fever follows and continues much longer. With the chill, pains set in, in one or more joints, and frequently spread to all parts of the body, attacking the muscles of respiration, rendering breathing short, hurried, and painful. The joint or joints affected soon become swollen, hot, painful, tense, and red, and excessively tender to the touch; moving them excites most excruciating pain. In severe attacks the patient dreads the bedclothes touching the affected parts; even a motion toward them causes him to cry out with fear. The countenance during this stage is singularly expressive of pain. During the continuance of the fever, the skin is hot and dry, the face flushed, and the salivary secretions partially suppressed. As the fever subsides, the skin becomes covered with a sticky, clammy, acid perspiration, the mucous membranes are more moist, and the saliva ropy, adhesive, acid, and more abundant. The urine is high coloured, turbid, very acid, scanty, more or less loaded with biliary matters, and has a strong odour of urate of ammonia, and a high spec. grav. The tongue is thickly coated, the pulse full and bounding, and the blood ropy and adhesive, the colourless corpuscles adhering together in little masses. The coloured disks become aggregated more or less in groups and rows, having a tendency to adhere to the meshes of fibrin. Spores and filaments of a minute algoid vegetation are discovered more or less abundantly distributed through the blood. These either float in the blood stream singly, or in ragged aggregations; in balls or in loose knots or skeins. The filaments have a wavy appearance, and are highly translucent and refractive. These with their spores, become almost invisible after being a short time between the slides. Therefore, to see them in all their beauty, they must be viewed as soon as the blood is drawn and placed under the instrument. The acute stage lasts from a few days to sometimes as many weeks; the pains shifting from place to place, now better, now worse.

One interesting and peculiar feature of this stage of the disease, is the strong tendency to corresponding parts or joints on both sides of the body being synchronously affected. This long ago attracted the attention of observers, and suggested the idea that the cause must be in the blood. It was also noticed that the parts the most remote from the heart were the most likely to be the first involved.

There is a tendency for important internal organs and membranes to become implicated; such as the pericardium, the endocardium, the pleuræ, peritoneum, and sometimes pneumonia from embolism. It is a remarkable feature of this disorder, that it confines itself almost entirely to the tissue; the characteristic proximate organic principle of which is gelatine, and that part of it which is the most dense and non-elastic.

That cold and sudden changes have a tendency to render less flexible and elastic this tissue is well known. This may explain the agency of sudden meteorological changes as exciting causes. Occasionally this disease attacks the muscular tissue, and their fibrous sheaths and the surrounding fascia.

It was long ago noticed that the severe inflammation of any part may suddenly subside and shift to another more or less remote. This peculiarity points to the blood for the cause. As the half-clotted blood slowly passes from the capillaries of one part, the inflammation subsides at that point; while the thick, ropy masses liberated, move on in the blood stream, till again caught in distant or near capillaries. Wherever this may be, sudden and acute rheumatic symptoms result.

The *chronic stage* is marked by the subsidence of the acute suffering. The joints are still swollen and tender, the perspiration clammy and acid, and the mucous secretions adhesive; but the patient feels comparatively comfortable. During this stage, frequently the heart becomes implicated. In the later periods of this stage, the swelling and tenderness have all gone from the joints, leaving them, however, weak and feeble, and deficient in their normal elasticity. The marked difference between this and the preceding stage is the absence in this of the chill and fever and the acute pain and tenderness. As the patient recovers, the blood loses its ropy adhesive character, and the algoid vegetation disappears. The sweat becomes less clammy, and the saliva less ropy, and the urine more normal in odour, specific gravity, and colour, and the whole man gradually puts on the appearance and positive conditions of health.

Pathology.—Congestion in the firmer unyielding tissues of the joints and fibrous membranes, followed by inflammation of a specific character. The congestion may frequently come on suddenly from a fatigued, enfeebled state of the organic muscular fibres of the blood apparatus, and from exposures to cold and damp, which renders the firmer tissues rigid, so that the plastic blood, its ropes of fibrin and adhesive masses of colourless corpuscles, creep along rather than flow freely through the capillary vessels of these parts. Hence result congestion, followed by inflammation.

These exposures and their effect upon the tissues are not specific causes, however, but merely states of the system brought on by surrounding conditions, which render it susceptible to the influence of the immediate cause. The cause may have been accumulating in the organism for weeks, months, or even years; while the effects of surrounding conditions upon the tissues may be sudden and common, alike to the healthy and rheumatic. Upon the former, they produce no unpleasant result; while upon the latter, the effect, perhaps, may usher in an obstinate and painful disease.

The exact condition of the congested vessels is one closely allied to embolism, the vessels being choked up with crystalline matters, with plastic partially contracted fibrin, with groups of adhesive colourless corpuscles and plugs, and tufts of algoid spores and filaments.

The *causes* may be divided into *primary*, *immediate* or *specific*, and *exciting*. The *primary causes* may be any or many of the indiscretions, exposures, vicissitudes, and accidents of life. These gradually derange the parent gland cells, so that they begin to form certain pathological products, which accumulate in the fluids and tissues, and sooner or later may become the specific causes of rheumatism. The fermentative tendency in the system with the algoid vegetation is common to all types of rheumatism, but is much more marked in the lithic type than in any of the others. Hence this plays a generic and not a specific part.

The specific causes are the special pathological products formed by the diseased parent gland cells, each of which is spoken of in its appropriate place. The causes are so evident that they and the conditions they produce are readily discoverable in the blood and the secretions and excretions, by means of the microscope—even during the incubative stage of the disease. Here we have another example where the microscope comes to our aid to enable us to discover and remove causes and conditions, and thereby either prevent or cure one of the most distressing diseases the physician is called upon to treat.

The *immediate or specific cause* of this form of rheumatism is the formation and accumulation in the tissues and blood apparatus of lactic acid or lithic acid, or both, and the lithates, together with a minute algoid vegetation. The accumulation of these frequently imparts to the fibrin cells of the blood an abnormal plasticity and adhesiveness; in consequence of which they have a tendency to adhere together in little groups. The fibrin filaments are also adhesive, and the fibrin cells and filaments, and the spores and filaments of the algoid vegetation have a tendency to form little plastic masses or emboli, which slowly flow along the capillary vessels in the firm unyielding fibrous tissues. Hence results local congestion and inflammation of a more or less acute character in the connective tissue, and sometimes in the articular cartilage. There is a tendency to the formation of thrombi in the vicinity of the heart. The perspiration and other secretions are all more or less abnormally acid. This form of rheumatism is almost always of the acute articular variety, with a marked tendency to heart implication. In the blood of this variety occur masses of minute algoid spores, and ropes and knots of algoid filaments, represented at *m n o x y z*.[1] I have designated these minute cryptogams the *Zymotosis translucens*. The spores are very minute and highly translucent and refractive. The filaments are also highly refractive, and wind in among each other more or less, and occur in all stages of development from a filament double the length of a spore to three and four inches when magnified 300 diameters. The spores are from slightly larger to two and three times the size of the fibrin cell granules. The sudoriferous gland ducts and plane surfaces of the skin are covered with an algoid vegetation resembling that which is found developing in the blood.

The urine also contains similar vegetation, which is, no doubt, the cause of the acidity of the secretions, and, perhaps, of the ropiness of the blood.

The *exciting causes* are those which produce a sudden debilitating influence, or a rigidity of the connective or gelatine forming tissue. These are exposures to damp, cold, fatigue, &c. They simply impart a state to the organism which makes it susceptible to an attack of the disease providing the immediate causes have, to a sufficient extent, accumulated in the body.

It is in this form of rheumatism that the *alkaline treatment*, properly pursued, is so highly beneficial. The blood should first be carefully examined under the microscope. To do this an incision is to be made in the arm; a drop of blood quickly pressed out and received upon the slide by touching the top of the drop with it. The drop should at once be covered with thin glass and placed under the microscope, and carefully watched, to observe the manner in which the red disks arrange themselves and the condition of the colourless corpuscles. Very soon little gaps will appear, from the aggregation of the red disks, in which will be seen colourless corpuscles (fibrin cells) more or less aggregated,[1] and here and there masses of minute spores, and, occasionally, ropes and knots of algoid filaments. As soon as the blood becomes quiet it will usually be found to arrange itself to some extent in ropy rows or masses. Crystalline matters are also occasionally met with which will presently be more fully noticed.

---

[1] *x y z*, represent the spores and filaments. *m n o*, the same more highly magnified.

Next the morning urine should be carefully examined, both chemically and with the microscope. Usually the urine will be found with a strong odour, sp. gr. 1.030 and upwards; and, on standing, a heavy deposit of urates, and, perhaps, uric acid coloured more or less with biliary matters. After obtaining all the information the urine will afford, the stools, saliva, and expectoration should be examined with the microscope. The patient should be then placed upon an antifermentative diet and treatment commenced. If he is suffering great pain in one or more joints, one or two leeches should be applied at each point where the pain is most severe and the following given internally:—

R.—Potass. acetat. ℥ij; potass. nitrat. ʒj; spts. nitr. dulc. ʒj; aquæ camphor. ℥vij.—M. S.—Take a tablespoonful in a glass of water half an hour before each meal, and at bedtime.

R.—Sodæ bicarbonat. ℥j; aquæ camphor. ℥vj.—M. S.—Take a tablespoonful in a glass of water two hours after each meal.

R.—Tr. ferri chlorid. ℥iij. S.—Twenty-five drops in a glass of water to be taken two hours before dinner and supper.

R.—Tr. iodin. ℥ij. S.—Paint over heart every day with a camel's-hair brush.

As often as the pain becomes severe apply a leech, and wrap the joints affected in warm flannel, and give beef-tea. Every day examine the blood and urine. In the course of four to eight days the pains usually will cease, and the blood will be found very thin and watery; it having lost its ropiness and adhesive properties to a great extent. While the blood is in this condition the patient's pains may suddenly all return with even more than the original severity. On carefully examining his case it will probably be found that his sufferings are of a neuralgic character from thin impoverished blood, which imperfectly nourishes the tissues. If the pains are neuralgic the alkalies should be stopped, and the tr. ferri chlorid. in twenty-five drop doses in a full glass of water given every four hours; and quinia, two grains every three hours. The pains will then soon cease. As the patient gains strength the blood should be daily examined; and if, on its thickening up, the ropiness and adhesiveness begin to return, the alkalies should again be resorted to until it disappears, and then the iron and quinia be resumed and continued as before. By carefully watching the blood in this way, and meeting promptly the indications as they arise, a permanent cure will soon be effected without danger of heart implication.

---

[1] These groups of colourless corpuscles stick to the slides and divert the free flowing currents of coloured corpuscles and serum from their course. By observing this their presence is readily discovered.

2. *Oxalic Rheumatism.*—The *symptoms* of this may be arranged under those of the incubative, the acute, and the chronic stages. The incubative and chronic stages are always present and long continued. The acute stage is almost always brief, and frequently absent or not well marked.

The *incubative stage* may last from a few months to many years. It may be present for some time without even attracting the attention of the patient. The first abnormal sensation experienced is a peculiar susceptibility to sudden changes of weather. At such periods the patient becomes dull, irritable, peevish, or morose, and he may or may not be sensible of dull uneasy feelings or aches about the joints, chest, back, and heart. Next in order, usually, is noticed a peculiar tired aching feeling in the muscles after any severe exertion or continued strain upon this tissue, as in the driving of a spirited horse, the muscles of the hands and forearms soon begin to tire and ache, &c.

If the case be closely followed, it will be noticed soon that the patient becomes irritable, desponding, and languid, with a want of his usual energy. He wakes up in the morning feeling often more fatigued than when he retired. Little mishaps and crosses in business and in social and family matters fret and worry him. The memory becomes defective, and he forgets to perform sometimes the most common daily duties. In casting up columns of figures, he loses confidence in his reckoning, and repeats the process sometimes over and over again. In counting money he doubts often the correctness of his count, and frequently repeats it. If he goes to the post-office to receive and put in letters, he frequently finds, on his return, the letters in his pocket that he intended to leave at the office. As the cause accumulates, he has an occasional dizziness or uncomfortable feeling about the head, and a prickling numbness about the extremities, especially if the nerves going to these parts are subjected to the least pressure anywhere along their course. The skin and mucous membranes become more or less dry, accompanied often by constipated bowels and scanty urine, loaded with crystalline and granular oxalates of lime. The same bodies also occur in the expectoration and feces. The blood is found to contain either little masses of the granular oxalate of lime *c*, or the peculiar crystals *d*, *s*, and *t*, or both. It also contains a minute algoid vegetation resembling that described under the head of lithic rheumatism.

The *acute stage* may or may not be well marked; usually it is the latter. This is probably owing to the fact that the cause accumulates slowly, the incubative stage being of much longer duration than that of the lithic type.

Sometimes, however, the acute stage is painfully represented. In such cases it is ushered in by a well-defined chill. The nails and lips become blue, the fingers shrivelled, the heart beats slowly, and the pulse frequently intermits. There is a congestive tendency occasionally to such an extent that more or less paralysis of some part or parts may result. During this algid state the patient usually eructates large quantities of gas from the stomach. The cold period is followed by more or less fever, which continues frequently for many hours, and with it are ushered in pains that are sometimes very distressing. These are confined mostly to the articulations and fibrous membranes, fasciæ, and sheaths. The suffering is less acute but more deep seated, grinding, and sickening than in the lithic type. One reason of this is no doubt the tendency the specific cause has to paralyze or blunt nerve sensibility, for the structural disturbances are more serious than in the previous variety.

The pulse is full, irregular, and hard; a marked tendency to cardiac implication is present; the heart palpitates on the least excitement; the skin is covered with a clammy, sour perspiration; the mucous membranes are dry and their secretions frothy, scanty, and ropy, the bowels constipated; the urine a deep muddy straw colour and sometimes milky from the presence of granular oxalate of lime; the blood ropy; the cell elements being more or less plastic and adhesive, and in it are found masses and plugs of the granular oxalates (*c*). The peculiar crystals *s* and *t* are frequently met with singly and in groups. Sometimes these crystals occur in multitudes in little emboli of fibrin, which are found floating in the vessels. Some of these emboli are represented at *g*, *h*, *f*. These, with many others, were found in the blood of a patient where there was serious heart implication.

As the pains of the acute stage become more and more dull and intermittent, the *chronic stage* of the disease supervenes. This form of rheumatism is usually of a chronic character, coming on gradually. It is frequently preceded and accompanied by lumbago and other varieties of the so-called muscular rheumatism. In this type of the disease and in this stage, the articular and other pains and aches may be only occasionally felt for several years. They occur more and more frequently till finally they become almost constant. Changes of weather aggravate them. The joints gradually become enlarged and are slowly drawn more or less out of shape and place. The patient suffers from fits of despondency. He loses at times all energy. The skin and mucous membranes become more or less dry, accompanied often by constipated bowels and scanty urine, loaded frequently with granular and crystalline oxalate of lime. This form of chronic rheumatism is usually regarded as incurable, or at least not curable by ordinary treatment. The joints in the latter stages often become anchylosed, and the patient suffers from severe fits frequently of melancholy. The heart is always more or less sympathetically affected with a tendency to organic disease, and palpitates on the least excitement. The head has often a peculiar numb vacant feeling, the memory becomes defective, and in the latter stages the mind at times is disturbed and the patient is exceedingly irritable, impatient, and childish. Numbness is frequently felt in the extremities and in some cases the patient imagines often he is about to die. The pulse becomes slow and sluggish, except under excitement, and often more or less intermittent, and the appetite perverted. Peculiar feelings of heat and cold occur in different parts of the body, and all sorts of imaginary ailments sometimes haunt the mind of the patient. On examining the blood, under the microscope, it will be found to contain masses of granules (*c*) of oxalate of lime, and frequently the peculiar crystals, *s* and *t* (stelline).[1] These crystals are usually either polyhedral or polygonal and occasionally oval. They generally appear to have from four to six or more sides, with a well-marked and characteristic fracture in the centre. These frequently occur in large numbers in the blood of patients labouring under this disease. Besides these bodies there are masses and ropes of algoid spores (*m*, *n*, *a*) and knots and skins of algoid filaments (*o*) (zymotosis translucens). The morning urine is usually loaded with granules and crystals of oxalate of lime. The expectoration and saliva also contain the same bodies in greater or less quantity.

Pathology.—This disease consists in a peculiar inflammation caused by the clogging up of the capillary vessels of the part or parts with masses of granules and crystals of oxalate of lime, with little emboli of fibrin, containing usually granular and crystalline matter, with plugs and ragged masses of algoid spores and fillaments, and with aggregations of sticky, colourless corpuscles. This inflammation results in more or less effusion, and extends more or less throughout the capsular ligaments, tendons, articular cartilage, and periosteal and perichondrial membranes; resulting in effusion, and often in the excessive formation of periosteal and perichondrial cells. If the disease continues sufficiently long, these cells are gradually transformed into bone and cartilage cells, causing enlargements of the articulations, and frequently anchylosis.

The *causes* are, primary, immediate, or specific and exciting.

The *primary causes* are defective alimentation, and the exposures, habits, indiscretions, and accidents of life. These act slowly and surely upon the parent gland cells, deranging their healthy functions so that oxalate of lime—a pathological and insoluble product—is formed. If these causes are in force long enough; and the proper conditions are present, this body gradually accumulates in the organism, till it begins to produce more or less, permanent paralytic symptoms and congestions in the firm portions of the connective tissue. Rheumatic pains are the result.

---

[1] I have not positively determined yet the constitution of this body. It occurs, so far as examinations have gone, in patients labouring under oxalic and cystinic derangements. The crystalline form being peculiar, I have given it the name of *stelline*, from the characteristic stellated fracture in its centre.

The *immediate or specific cause*, or that which determines the type of the disease, is oxalate of lime. This is generally formed by the diseased parent blood gland cells, and being insoluble in the fluids of the body, accumulates in the blood.[1] As soon as it is present in sufficient quantity so that the masses or groups of granules and crystals are too large to pass freely through the capillary vessels, they begin to produce congestions in the more unyielding tissues, and rheumatic pains and aches are ushered in gradually or suddenly, according to circumstances. There is a tendency in this condition for the fibrin to aggregate and become ropy, and the coloured and colourless corpuscles to take on an adhesiveness, which tends to the forming of thrombi and emboli (*g*, *h*, *f*). These, when examined, are found full of either stelline granular and crystalline cystine, or oxalate of lime. There is also more or less of a fermentative tendency excited, probably, by the development in the blood, secretions and excretions, of a minute species of algoid vegetation (zymotosis translucens.) . . . . This plant is figured at *o*, *x*, *y*, and *z*.

The greater the tendency to embolism, the more danger there is of heart implication, and the more obstinate and prolonged the disease.

The *exciting causes* are exposures to damp and cold, and sudden meteorological changes. These render less elastic the firmer portions of the gelatine-forming tissue, narrowing the calibre of the capillaries of these parts, thereby endangering congestions, providing the specific cause has accumulated to a sufficient extent in the blood.

In this type of rheumatism the *treatment* is quite different from that of the *lithic*. The gland cells here are forming a salt which is insoluble in the secretions and excretions. Our remedies must not only keep up free elimination, but tend to reduce to solution insoluble matters, already formed and accumulated, and to so act upon the parent gland cells as to restore their normal functions, and prevent the further formation of abnormal products. The treatment suggested by the cause and conditions present, and adopted in a great number of cases, with good results, is in the main as follows:—

℞.—Acid. nitromuriatic. dil. ℥vj. S.—Put a teaspoonful in half a pint of warm water, and wash the body and limbs all over every night and morning, and wipe dry after. Also, take 10 drops in a full glass of water two hours after breakfast and dinner.

℞.—Potass iodid. ʒiv. to ʒvj; wine colchicum (seeds) ℥jss; ammonium chlorid. ʒij; tr. cinchona comp. ℥vss; tr. gentian comp. ℥j; tr. guaiacum ℥j.—M. S.—Take a teaspoonful half an hour before each meal.

℞.—Potass. acetat. ℥ij; spts. nitre dul. ℥j; aq. menth. pip. ℥vij.—M. S.—Take a tablespoonful in a glass of water at night on retiring.

---

[1] At the same time this body is formed by the other parent gland cells of the system, and gradually accumulates in the various tissues, and excretions and secretions.

Put the patient upon 4 to 6 ounces of raw beef, the yelks of three eggs, and 3 or 4 ounces of cream at each meal. With this he can have beef-tea, oat-meal mush, or Graham bread, and a little potato.

Avoid all sweets and organic acids, pies, cakes, and fruits and wines. If any stimulant is allowed, let it be a little good whiskey, brandy, or gin.

Paint the swollen joints, and over the heart, and over all other affected parts, with tincture of iodine, every other day, and wrap the joints with flannel wet with alcohol or spirits of camphor every night.

By pursuing rigidly this plan of treatment—keeping the system braced up, and the blood in good condition—I have obtained good results almost invariably.

3. *Cystinic Rheumatism.*—The constitutional disturbance in this form arises from the accumulation of cystine in the system. Previous to the appearance of severe rheumatic derangement, cystine may have been gradually forming for months, and even years, without the patient having been affected with more than wandering pains and aches, and these mostly during sudden changes in the weather. This is the incubative stage of the disease, which may continue for months or years; the patient feeling most of the time quite well. If he be watched closely, however, it will be noticed that he is more irritable than usual. Little misfortunes, troubles, and pains and aches are magnified. In his business and domestic relations he is easily crossed, and matters that he would laugh at, if well, now worry him, and his memory becomes defective. The only way he can shake off these spells of depression, is to at once engage in something that interests him; and as soon as his mind becomes absorbed in the business before him he forgets his imaginary troubles. His leisure hours are the gloomy portions of his existence. The weakest tissue is always the one the first and most affected. This is the reason why this body produces in different individuals such a variety of irritations. If the nerve tissue is the weakest and most overtasked, this will be the one the most affected, and the patient will be troubled with loss of energy, fits of despondency, lassitude, &c. This irritation frequently produces, when occurring in pregnant women, puerperal mania; in young ladies, during the menstrual period, peculiar derangements of mind, and frequently it is in them the cause of insanity.

Cystine, like oxalate of lime, has a tendency to irritate and affect most the weakest tissue, and the weakest part of that tissue. When it results in insanity, the insanity is curable. It will pass away with the cause. This body, like oxalate of lime, accumulates in the bloodvessels and in the nerve-tissue. When it occurs to any great extent in the blood, it tends to form masses of crystals and granules, around which fibrin aggregates, forming clots or emboli more or less firm (*g*, *h*, *f*). These clots are frequently attached to the inner wall of the bloodvessels, forming thrombi. Cystine and stelline occur crystalline in the blood, often in great abundance.

The form of the crystals is represented at *d*, *s*, and *t*. These forms are frequently found in the urine of old cases of the disease. In the centre of each crystal (*s*, *t*,) is a well-defined fracture. Where either these or the granules of cystine (*b*) occur very largely in the blood, the patient is troubled more or less at times with a strange, vacant, dizzy numbness about the head, or perhaps a stricture, as if the head was in a vice, or constricted by a band. Occasionally it feels as if swelling upwards on top; or objects tremble before the eyes as if heated air was rising between him and the objects viewed. The street seems at times to rise up before him, and he reels as if under the influence of liquor. There is frequently numbness of the extremities, with coldness, and a slow, sluggish pulse. The least pressure over the course of a nerve excites numbness in the portion of the limb beyond. The heart is easily excited to palpitation, and frequently the pulse intermits. A dull, uneasy ache pervades the cardiac region, and often extends to the muscles of the whole chest and shoulders. Lancinating pains are occasionally felt in the same region. Creeping chills are frequent, alternated by flashes of heat. The skin is dry, and the cuticle furfuraceous to such an extent frequently that you can write your name with the finger-nail upon it. The mucous membranes become dry, their secretions scanty, and the bowels are constipated often, the stools resembling opium extract. The urine also frequently becomes scanty, and irritates to some extent the bladder, kidneys, and ureters, necessitating the rising of the patient sometimes several times during the night. Small calculi are occasionally passed, giving severe pain in back, and along the ureters. As the granules of cystine or oxalate of lime escape from the tubuli seminiferi during the night, the irritation excites dreams and emissions of semen, giving rise often to severe and obstinate spermatorrhœa.[1] The patient, in this condition, is sometimes affected with severe and obstinate neuralgic pains in the head, the joints, stomach, heart, bowels, lumbar region, along the sciatic nerve, in region of liver or mesenteric glands, or at any other irritated part. The muscles soon tire, and feel sore on being struck or over-exercised. Whenever a muscle is kept in constant tension for a short time, it aches. If the patient has at some previous time been injured by a fall, a blow, or a strain, these points are the first to feel the pains. These are some of the multitude of symptoms that occur in the progress of the accumulation of cystine in the system. During the later stages in this period of accumulation the patient is liable, under a great variety of circumstances, to be attacked with chronic inflammatory rheumatism, with epilepsy, with partial paralysis either of a slow character, or of the sudden apoplectic variety; or with peculiar aberrations of mind from simple nerve irritation. Now, this class of diseases are nearly all curable when they are produced by this cause, especially if no organic lesions have set it; even where it would seem that brain-softening has already begun. By removing the cause, all abnormal symptoms cease, and the patient is restored to perfect health. The cure, in all cases of this character, is necessarily slow, requiring much time and perseverance.

---

[1] To effect a cure in such cases, the cause of the spermatorrhœa must be removed.

Rheumatism resulting from the accumulation of cystine is usually of the chronic articular type, producing enlarged joints, which continue to increase in size; the bones being gradually drawn more or less out of place, with a tendency to anchylosis. The location of the disease which results from the presence of either oxalate of lime or cystine as a cause, is determined by external conditions, and by the weakest tissue of the organism.

The *treatment* of this form does not vary materially from that of the oxalic type.

In the first place the blood should be carefully examined microscopically for any and all abnormal products and conditions. After these are determined, the morning urine should be submitted to a chemical and microscopic examination, and whatever is abnormal carefully noted. Then the stools should be examined microscopically. The expectoration and saliva should not be overlooked, and even the cuticular portion of the skin and tongue surfaces should be examined with the microscope. The first object in the treatment should be to remove causes, and the second to palliate suffering, and allay nerve irritability. It is of the first importance, in handling any disease, to keep up healthy elimination, secretion, digestion, and assimilation. Healthy alimentation should not be overlooked; nothing should be taken into the system that tends in any way to increase the cause.

In selecting the remedies, those should be chosen which will act the most directly in removing the cause, and in so acting upon the parent gland cells that they may be brought to that state where they may cease to organize abnormal products. During this treatment, it is of the first importance to keep the system well nourished. This is accomplished by proper exercise, healthy alimentation, and a judicious selection of tonics.

The following general treatment I have used with good results in a large number of cases.

℞.—Acid. nitromuriatic. dil. ℥vj. S.—Put a teaspoonful in half a pint of warm water, and wash the body and limbs all over every night on retiring. Also, take 10 drops in a glass of water two hours after breakfast and dinner.

℞.—Potass. iodid. ʒiv; wine colchicum (seeds) ℥j to ℥iss; tr. cinchona comp. ℥iv; tr. gentian comp. ℥iij; ammonium. chlorid. ʒij; tr. guaiacum ℥j.—M. S.—Take a teaspoonful half an hour before each meal.

℞.—Potass. acetat. ℥ij; spts. nitr. dilut. ℥j; aq. menth. pip. ℥vij.—M. S.—Take from a teaspoonful to a tablespoonful in a glass of water at night on retiring.

℞.—Tr. iodini ℥ij. S.—Paint over heart and joints every second or third day with a camel's hair brush.

If necessary, occasionally blister the joints with cantharidal collodion. Keep the bowels open by drinking a couple of glasses of water, or a pint of Kissengen, Vichy, Seltzer, or Congress water, on rising, followed, if necessary, by an injection of warm water. To prevent piles and irritability of the rectum, and to lubricate the lower portion of intestine, insert in rectum nightly a suppository of the benzoated oxide of zinc, made with the butter of cocoa. To keep up good circulation, and to invigorate the muscular and other tissues, the patient should be pounded all over for ten minutes, morning, noon, and night, with a little apparatus made as follows: Make a hair ball five inches in diameter on the end of a rod fourteen inches long. Cover the ball with soft leather, and stuff with curled hair.

The inflamed joints should be thoroughly rubbed with the bare hand three or four times daily. The patient should eat four or five ounces of raw beef morning, noon, and night. The beef should be scraped fine at each meal, and mixed with the yelks of two soft boiled eggs, some cream, and pepper and salt. This should be eaten first, and then followed by some rarely cooked steak, or other meat, with a little bread and potato, oat meal, or Graham flour mush. Avoid as much as possible all sweets and acids. The warm bath should be taken about twice a week, and iron and quinia should be freely used, whenever needful to tone up the involuntary muscles, and to prevent chilliness. By continuing this treatment from three months to a year, rigorously, almost every case of this description may be cured. A rapid improvement must not be looked for. As the patient recovers, his pains gradually pass away; his mind becomes clear and normal; the memory restored; energy and ambition return; and he soon begins to feel—after long suffering—as if he was entering a new world.

4. *Phosphatic Rheumatism.*—This form is caused by the formation and accumulation of the phosphates of the alkalies and alkaline earths. It may be acute or chronic. There is in this a greater tendency to periosteal congestion and inflammation than in the other types. The symptoms of its incubative stage resemble more closely those of the lithic acid type than the oxalic or cystinic. There is a greater tendency for this disease to assume the chronic form than in the lithic type, and a less tendency to it than in the oxalic and cystinic types. The approach of the disease is marked by more or less nerve irritability and pains during sudden changes of weather. I have treated a number of well-marked cases of this type with good results, though I have had less experience with this form than with either of the others.

In the *treatment*, the first thing is to carefully examine the blood, urine, feces, expectoration, and saliva, in order to get at the true condition of the fluids, secretions, and excretions of the body. These determined, the various organs should be carefully examined to ascertain whether there is local, organic, or functional disturbance. This determined, where there is no local organic trouble, the following is the general treatment to be followed:—

R.—Potass. acetat. ℥ij; spts. nitr. dul. ℥j; potass. nitrat. ℥ss; aquæ menth. pip. ℥viijss.—M. S.—Take a tablespoonful in a glass of water two hours after each meal.

R.—Potass. iodid. ʒiv; wine colchicum (seeds) ℥j to ℥iss; tr. cinchona comp. ℥iv; tr. gentian comp. ℥ijss; tr. guaiacum ℥j; ammonium chloride ʒij.—M. S.—Take a teaspoonful half an hour before each meal.

Paint tincture of iodine over the heart and inflamed joints every second or third day with a camel's hair brush.

Occasionally, a leech applied to the more inflamed and painful joints relieves the sufferings of the patient. The application of cantharidal collodion occasionally aids in relieving pain and swelling. The tr. ferri chloridi and quinia should be freely used at the proper time to improve the condition of the blood, and to give tonicity to the bloodvessels and heart, and to destroy the algoid vegetation in blood. The nitromuriatic acid bath should be given morning and evening, rubbing well afterwards. Passive exercise should be kept up morning, noon, and night, by pounding the body all over with the hair ball. The pounding should be tempered to suit the sensibility of the patient. The bowels should be freely evacuated once daily. The raw beef diet, as described under cystinic rheumatism, should be used. No cooked meats, and especially fish and the whites of eggs, should be allowed. Potato and bread, with oatmeal porridge and Graham mush and good ripe grapes, may be taken at each meal. All the glands and glandular surfaces should be kept in as healthy a condition as possible.

This treatment pursued for from four weeks to three months usually effects a cure, even in old long-standing cases.

In all forms of rheumatism, the sweat, urine, and secretions are more or less acid, and the skin and mucous membranes are covered more or less with algoid vegetation. There seems to be a peculiar fermentative state of the excretions and secretions. The blood contains masses of minute spores and bundles and knots of minute algoid filaments (*zymotosis translucens*).

This algoid vegetation probably has something to do in giving plasticity to the colorless corpuscles, and causing them to adhere in masses, as described under lithic rheumatism. Two, more, or all of the types of rheumatism may be combined in the same person, in which case the treatment should be varied to suit the conditions present.

The masses of granules—in the blood—of either cystine (*b*), of oxalate of lime (*c*), or of phosphates, are readily distinguishable from the masses of algoid spores, *m*, *n*, and *a*. The granules of phosphates, cystine, and oxalate, have a well-defined outline, and do not become less and less visible as the blood stands longer and longer between the slides, as is the case with the algoid spores; besides, the spores are more uniform in size, and more highly refractive, and have a fainter outline.

Fig. 1.

Fig. 2.

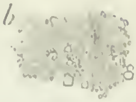


Fig. 3.

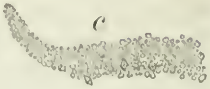


Fig. 4.

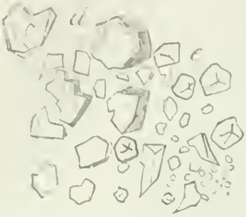


Fig. 6.

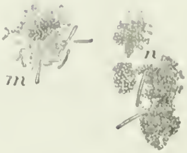


Fig. 7.

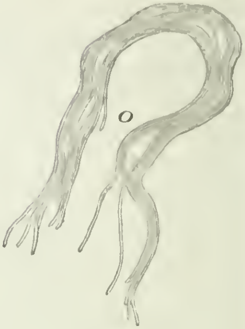


Fig. 5.

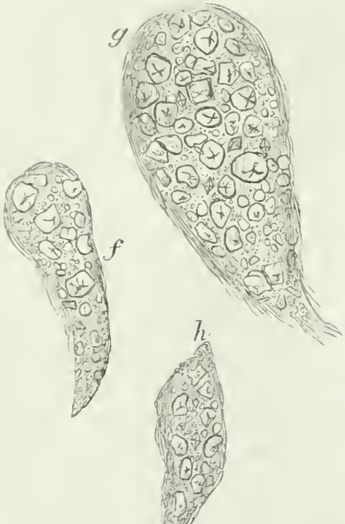


Fig. 8.

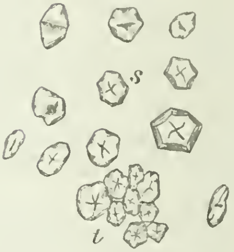


Fig. 9.

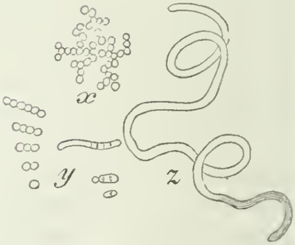


FIG. 1.—*a*. Plug of algoid spores (zymotosis translucens) from the blood of a patient labouring under lithic rheumatism.

FIG. 2.—*b*. Mass of granules of cystine from the blood of a patient labouring under cystinic rheumatism.

FIG. 3.—*c*. Mass of granules of oxalate of lime, with here and there a minute crystal, from the blood of a patient labouring under oxalic rheumatism.

FIG. 4.—*d*. Crystals of cystine from the blood of a patient labouring under cystinic rheumatism.

FIG. 5.—*f*, *g*, *h*. Embolia, filled with crystals of stelline (cystine?), from the blood of a patient labouring under cystinic rheumatism. Heart seriously implicated.

FIG. 6.—*m*, *n*. Algoid spores (zymotosis translucens) from the blood of a patient labouring under oxalic rheumatism.

FIG. 7.—*o*. A skein or bundle of algoid filaments (zymotosis translucens) from the blood of a patient labouring under lithic rheumatism.

FIG 8.—*s*, *t*. Crystals of stelline (cystine?) from the blood of a patient labouring under cystinic and oxalic rheumatism.

FIG. 9.—*x*, *y*. Algoid spores (*a*, *m*, *n*) more highly magnified, and showing the manner in which they develop into filaments. *z*. Algoid filament (*o*) more highly magnified, showing the structure, &c.

We have the reports of a number of cases of the several forms of rheumatism just described, and also of cases where the causes which produce certain types of rheumatism caused either epileptic or paralytic diseases, and sometimes aberrations of mind, but the length to which this paper has already extended renders it necessary to postpone their publication.

In conclusion, I will merely state that these investigations were commenced in 1859. The classification and results, as here given, were first presented to the public in my lectures in Charity Hospital Medical College, in 1864, and a summary of my results were published in the No. of this Journal for April last.

Art. V. — *On Some Points Relating to Fractures of the Neck of the Femur.* By John H. Packard, M. D., one of the Surgeons to the Episcopal Hospital, Phila.; Mütter Lecturer on Surgical Pathology, etc. (With eight wood-cuts.)

Certain facts in regard to the surgical anatomy of the hip-joint, and of the upper part of the thigh bone, seem to me to have failed to find due appreciation from those who have hitherto written upon this subject; by some they are scarcely mentioned, by others not at all. And although, perhaps, most surgeons could, if asked to do so, state clearly and promptly their creed in regard to the fractures occurring in this region, and give high authority in support of it, I hope to show in the following pages that the matter may still be not unprofitably discussed.

It would take up too much time and space to review the opinions and statements of authors, nor shall I even quote them except incidentally, and when they are not likely to be within the reach of most of the readers of the *Journal.* Let me ask the indulgence of those who may be familiar with some of the facts or views herein presented.

Fractures of the cervix femoris are divided, as every student knows, into those which are altogether within the capsular envelope, those which are altogether outside of it, and those which are partly within and partly without. In cases of the first variety bony union is by some thought never to occur, while in those of the other two it is quite constant. By other surgeons exceptions to the rule of non-union in intracapsular fractures are strongly urged, while others still are simply willing to admit that such may possibly have been met with. This question need not be discussed just now.

Let us first define accurately the difference between extra and intracapsular fractures, and the rationale of their occurrence. And first, as to the extent of the cervix femoris which properly belongs to the joint. Without occupying time in quoting the statements of various anatomists, let us take at once what is revealed by the dissection of this part in well-developed adult subjects.

On laying bare the capsular ligament, properly so called, of the hip, we find that it extends from the edge of the cotyloid ligament (the fibro-cartilaginous ring which deepens the acetabulum) to the base of the neck of the bone; that is, to the root of each trochanter, and to the ridges which connect them in front and behind. Dividing this capsule by a cut lengthwise from its acetabular margin to its femoral attachment, we find it lined by a synovial membrane reflected from it to the neck of the bone. If now the reflection of the synovial membrane corresponded exactly to the attachment of the capsular ligament, the extent of the joint would, it is clear, embrace the whole neck of the femur. Such, however, is not the case. Upon careful study of fresh specimens we find that there is a portion of the neck at its root surrounded only by fibrous tissue, the outer layer of which is a part of the capsular ligament, while the deeper is the periosteum; these two layers being, of course, inseparable by dissection.

Generally, the distance between the reflection of the synovial membrane and the intertrochanteric lines is about half an inch; one or two pockets, however, existing, where the joint cavity is somewhat prolonged outwards. One of these pockets is usually just within the gemelli muscles in the digital fossa, behind the greater trochanter. Differences exist between different individuals in regard to the precise relative extent of the synovial membrane and the neck of the bone. But I have in no case found the true joint-cavity within less than one-half an inch of the base of the lesser trochanter in an adult.

I think, but am not prepared to assert positively, that in subjects whose cervix femoris is long, and set on at an obtuse angle with the shaft, this distance is greater than in those in whom the angle between the neck and shaft is more acute, and the neck shorter.

What has now been said seems to me to justify the drawing of a distinction between fractures of the cervix femoris within the joint and those which are simply within the capsular ligament. The force of this distinction will be at once apparent.

In regard to the immediate investment of the neck of the thigh bone (called by Amesbury, the "close coverings"), an arrangement exists which is mentioned by very few anatomists, and not by them with a full appreciation of its importance. Under this portion of the synovial membrane are often to be noticed, raising it into longitudinal folds, strong ligamentous bands,[1] like ridges. Once, in a fresh joint taken from a subject at the Philadelphia Almshouse, I saw a vessel of some size running along one of these folds. Another subject, a woman, examined by me at Dr. Keen's anatomical rooms, had in each hip-joint three such folds, running obliquely (spirally) from left to right in that of the left, and from right to left in that of the right side; she had, besides these, the longitudinal bands above described. Comparing with this the hip-joints of another subject, a male, with well-marked bones (the neck of the femur was much shorter than in the other case), I found but one such fold, and that not a very strong one.

---

[1] Called by Weitbrecht "retinacula." Harrison, in the Dublin Dissector, and Todd, in the Cycl. of Anat. and Physiology, art. Hip-Joint, also notice these.

When these folds exist they must obviously exert an influence in diminishing the liability to fracture of the neck, and, in the event of such fracture, would, unless themselves broken across, tend to prevent displacement. Furthermore, if, as in the case before mentioned, they bear vessels, these would be of importance in the nutrition of the pelvic fragment; a nutrition which is constantly impaired when these accidents occur.

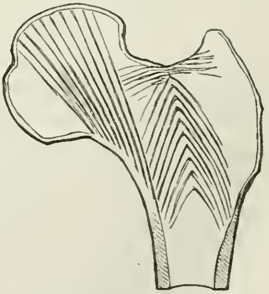
Upon dissecting some fresh hip-joints, we cannot but be struck with the great vascularity of the ligamentum teres, as compared with that of other fibrous structures; and it seems as if its object must be the nourishment of the head of the femur. Amesbury, although he represents this very well in several cuts, says that these vessels "are so extremely minute that we cannot suppose that the head of the bone derives any considerable portion of its nourishment from this source." But when, in intra-capsular fractures, the close coverings of the neck are torn through, no other vascular connection exists between the pelvic fragment and the rest of the body, so that whatever blood the former gets must be through this channel.

I believe that this vascularity is diminished very much after middle life; such has been the case, at least, in a number of old subjects examined by me, nor have I either notes or any recollection of a single instance to the contrary. It is probable that the supply of blood from other sources to the head and neck of the bone is likewise lessened in old age, as the atrophy natural to that period of life progresses.

A careful examination of vertical sections of the head and neck of the femur shows, as several writers have pointed out, that a number of the cancellous columns, beginning at the upper end of the inner wall of the shaft of the bone, diverge upwards to the concavity of the thin articular lamella of compact substances of the head so as to receive the weight of the body upon their extremities. (Fig. 1.)

Another series of columns are found to run up outwards from the same point, and from a line running upwards from it, to meet other columns running up inwards from the outer wall of the shaft; and these two sets of columns form a series of groined arches culminating at the upper wall of the neck of the bone, a little to the inner side of the greater trochanter (Fig. 1). By this arrangement

Fig. 1.



the shifting of the weight towards the outer or upper portion of the head of the bone is provided for, the pressure coming in greater degree on the outer wall of the shaft, the inner wall, however, receiving its share through the inner columns of the arches.

The remainder of the cancelli run in various directions, not capriciously or at random, but so as to afford in the aggregate a very strong support to the solid wall of the bone. Sometimes it may be clearly seen that they are so placed as to run as nearly as possible in the line of muscular traction; an arrangement the mechanical advantage of which must be at once evident.

On comparing femora from different skeletons we find, as is well known, that the angle at which the neck is set on to the shaft varies very much. Sometimes, and especially in old persons, it is not much more than 90°. Ward states it to be on an average about 125°. And here I desire to suggest what I believe to be a fact, that such variations in the angle between the cervix and the shaft of the bone involve variations in the before-mentioned arrangement of the cancelli. When the angle is more acute, the weight of the body falls more on the outer portion of the head of the bone, and hence is distributed to the walls of the shaft through the groined arches above spoken of. The effect of this is, sometimes, that the starting point of the set of diverging cancellous columns first described is further upwards and inwards on the inferior wall of the cervix (Fig. 2). Some specimens, again, exhibit scarcely any arrangement of this kind, the cancelli being massed in the groined arches, and the neck consisting of a reticulation of bony tissue whose fibres have merely a general direction towards the compact substance covering in the head (Fig. 3).

Fig. 2.

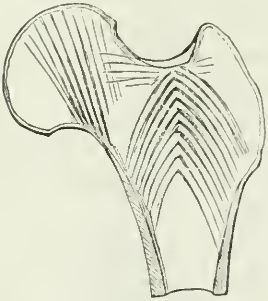
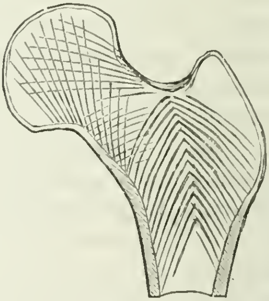


Fig. 3.

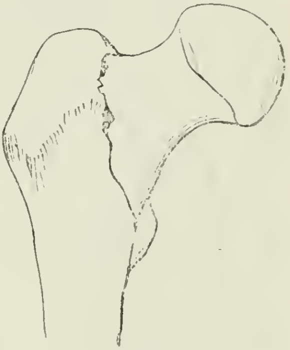


Now it must be obvious that in the first of the two conditions just described (Fig. 2), the cervix would be apt to give way at a point nearer the head than in that which usually obtains; while, in the second (Fig. 3), a transverse fracture close to the margin of the head might occur far more readily than when the diverging columns were well developed. If, therefore, the statement already made as to the arrangement of those diverging columns be correct, it will be seen why in some cases a fracture entirely within the joint-cavity takes place, the bone yielding above the reflection of the synovial membrane, while in other cases this could not occur, because the weakest portion of the cervix begins just above and in front of the trochanter minor, and runs upwards towards the upper wall somewhere nearer the crown of the head of the bone.

This idea finds support in the fact that, in a number of extra-capsular fractures examined by me (over twenty), and in all the illustrations of them given by authors, *the pelvic fragment has a long point embracing the portion of the lower wall of the cervix just alluded to.*

The annexed woodcut (Fig. 4), representing a specimen in the Museum of the Jefferson College in this city, illustrates this idea in its simplest form.

Fig. 4.



Now, in many extra-capsular fractures of the cervix femoris, the trochanter major is broken off. Prof. R. W. Smith, of Dublin, lays it down as the result of his experience that "it never happens that the neck of the femur is broken external to the capsule, without injury to the trochanter." But in three specimens examined by me this complication was wanting. Sometimes other lines of fracture run in other directions, splitting these main fragments into smaller ones, the lesser trochanter being also occasionally separated. By what rationale are these lesions to be explained? Some of them are so irregular as apparently to come under no general rule; but a careful scrutiny will always show that the arrangement of the cancelli influences the extent and direction of the breakage.

From the specimens which I have been able to obtain for examination, I am led to think that most usually the so-called extra-capsular fracture skirts the edge of the articular cavity, that part of the bone yielding which is covered by the band of capsular ligament between the reflection of the synovial membrane and the trochanters and intertrochanteric lines. When the fibrous tissues are preserved in preparing dried specimens, they are apt to shrink, so that fractures probably altogether within the capsule might readily be supposed to be partly outside of it.

By many standard writers on anatomy as well as on surgery, the statement is made without qualification that a lessening of the angle between the neck and shaft of the femur is a constant phenomenon of advancing age. And yet the doubt—first suggested, I believe, by Gulliver in the *Edinburgh Med. and Surg. Journal* for 1836—as to the correctness of this view, may be readily shown to be well founded by the study of specimens. The result of such study is that the bones of neither the old nor the young present any uniform character in this respect; in some skeletons of persons 70 or 80 years of age, the cervix is set on at a very obtuse angle with the shaft, while in some not older than 25 it does not exceed 110° or 120°.

Let it be clearly understood that I do not deny that this change may occur in some subjects in advanced years, as one of the phenomena of old age. Such a statement would, in fact, be difficult either to prove or to disprove, since no one bone can be watched during the period assigned to the process. All that we can say is that many old persons present the more obtuse angle, and many young persons the less, between the shaft and the head of the femur.

Now it will be at once asked, why, then, are the old so much more liable to fracture of the neck of this bone near its head than the young? Simply because of the diminished strength of the bony texture in the former. Many very old persons have undoubted extra-capsular fractures of this part, because the shape and structure of the bone are such as to prevent its giving way near its head. A typical specimen of this kind, taken by me in 1856 from a man named Lewis, æt. 74 years, is now in the museum of the Pennsylvania Hospital.

According to my own observations, whenever young femora present an acute angle (say from 110° to 115°) between the neck and shaft, they have also a texture so strong, and are so thick and firm, as to resist any force which can be brought to bear upon them. Possibly cases may occur in which the condition of old age is more nearly imitated, and then an intracapsular fracture might take place; but I have never met with such a bone.

After all that has now been said, it seems hardly necessary to state formally that the point I seek to maintain is that, in some cases, the femur being at its upper part of a certain shape, the change in texture which takes place in the neck of the bone after the age of 50 years, combines with the existing mechanical arrangement to render the cervix liable to become fractured transversely, or nearly so, close to the head. This change in texture—and perhaps in consequence of it an exaggeration of the rectangular position of the cervix—is very common in the old. It may, like the arcus senilis, or like ossification of the costal cartilages, be absent; or it may, like these changes, be met with at a much earlier period of life. Still, it belongs among senile degenerations, and has a direct bearing upon the liability of the old to fractures of the cervix femoris within the capsular ligament.

The rationale of the production of fractures of the cervix femoris, so far as known, seems to me to bear out these theoretical views

As to extra-capsular fractures, or those which affect the bone either wholly or partly outside of the synovial membrane, the causes may be divided into two classes: (*a*), falls on the feet or knees, the weight of the body coming on the head of the femur, or the converse—violence applied to the thigh (whether directly or through the leg), forcing the femur upward against the acetabulum; (*b*), falls, blows, or other forces coming against the greater trochanter and driving it inwards against the pelvis.

In the first of these two classes, the femur may be looked upon as a bent lever, acted on at a great disadvantage by two forces tending to increase its angle, or we may regard the neck and upper part of the shaft as representing an obtusely pointed arch, whose abutments are driven together. It yields first at its weakest point, where, namely, the bony matter is massed together at the apex of the fasciculus of diverging columns running up to the head; and this point may be, as stated in a previous page, just above and in front of the lesser trochanter, or further upward and inward towards the head. From this point the breakage runs more or less irregularly upwards across the axis of the cervix. The violence may end here, or the fragment thus made may be tilted up and driven outwards, perhaps by the patient falling upon the side, splitting away the groined arches at the base of the greater trochanter.

When the force acts against the greater trochanter from without, the bone gives way in like manner, its angle being increased, but the lower fragment is driven inwards against the upper, so as to produce the same splitting up of the trochanter as in the case first supposed. As a general rule, I believe, the character of the injury to the soft parts is such as to bear out these statements; the fibrous investment giving way completely above and in front of the neck, while below, and at the outer side of the bone, a part of it may remain unbroken.

Secondly, as to intra-capsular or intra-articular fractures—such as affect that portion of the bone surrounded by the synovial membrane. These need not be directly transverse, but are apt to be much less oblique than are the majority of extra-capsular fractures commonly so called. Moreover, by reason of the arrangement as well as of the condition of the bony texture, they are in general less deeply serrated.

Any two forces, one driving the trochanteric part of the bone upwards, forwards, or backwards, while the other sends its head in the opposite direction, may produce intra-capsular fracture in bones of the shape before described as liable to this form of injury, especially if the person be old, and the nutrition of the bone impaired. Types of this kind of violence are well-known; slipping off a curb-stone, twisting the foot outwards, a fall on the back of the trochanter. Such forces could not produce fracture in bones whose cancelli have the arrangement shown in Fig. 1; they might do so in such as are represented in Fig. 2, and in Fig. 3 a structure is depicted which would easily yield, especially when the nutrition is defective.

With regard to intra-capsular fracture of the cervix femoris, the most important question, and the one which has been most discussed, is as to the possibility of its becoming united by bone. All doubt in the matter would be set at rest at once by the production of a single bone in which such union could be demonstrated to have occurred. And many surgeons have thought that this character could fairly be claimed for certain specimens. R. W. Smith mentions seven of these, which he considers as deciding the question affirmatively; they will be again referred to. Dupuytren goes so far as to say—

> "Several anatomical preparations of intra-capsular fractures of the cervix femoris, well united, are to be seen scattered through the different museums of anatomy. Those which the shelves of the faculty of Paris and of the Hôtel Dieu contain, prove the reality of bony union, with or without deformity, beyond question. The ossific deposit in these specimens is often very regular, presenting itself sometimes in the form of connecting bridges, extending splintwise from one fragment to the other. It seems probable that Sir Astley Cooper had only seen fractures of the neck of the femur which had not been cured, or which had been badly treated, or altogether neglected."

Sir Astley Cooper does not deny the possibility of bony union, and, indeed, admits that he has met with one case[1] among the many examined by him.

Hamilton, the leading American authority, says "we have never yet seen a specimen which, upon a careful examination, proved satisfactory;" but he expressly disclaims anything like denial of the possibility of bony union under certain circumstances. It would scarcely, however, be worth while for me to quote the views of various surgical writers on the subject, since they are so easily accessible in standard works.

My object at present is to offer a different explanation, of which all the specimens and representations, to which I have yet had access, seem to me to be fairly susceptible.

This is, that in the cases in question *the fracture has been extra-capsular, or partly so, and has become firmly united by bone; after which a gradual absorption of the pelvic fragment has taken place, so as to bring the head close down to the trochanters.*

The grounds upon which I base this view are, in the first place, the fact that wherever sections of these specimens are made, the line of fracture, or at least the apparent line of union, begins just above the lesser trochanter, at the point where the cancellous columns start to diverge upwards to the head of the bone—the point always included in the pelvic fragment in cases of extra-capsular fracture. Secondly, the fact that in very many of the specimens of intra-capsular fracture with ligamentous union, where no pressure has been brought to bear on the femoral fragment, the neck is not absorbed; for which we may account by the continued supply of nourishment to this part. Such, then, ought surely to be the case in some, at least, of the specimens in which it is claimed that bony union has occurred. Thirdly, the fact that where the histories of these specimens are obtainable, it will be observed that the cases were *not* those in which circumstances would seem to have specially favoured bony union.

---

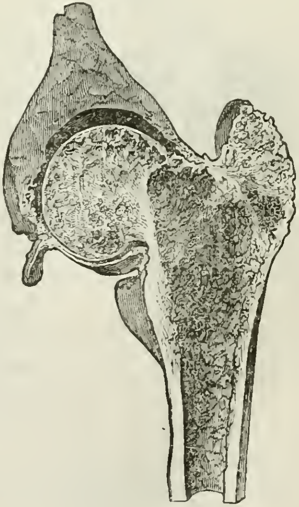
[1] Treatise on Dislocations and Fractures of the Joints, p. 137, London, 1842.

I am aware that those who, with Prof. R. W. Smith, hold that the trochanter major is always broken in cases of extra-capsular fracture of the cervix, will find in this an argument against the view now advanced. But perhaps it is in the very cases in which the trochanter is not broken (and that this may be is proved by three cases out of twenty within my own observation) that such absorption of the cervix takes place, and the head is brought close down to the upper end of the shaft.

I offer this theory only after a very careful examination of all the statements of cases, with or without representations of the specimens, both by American and foreign writers, in which bony union of intra-capsular fractures has been claimed to exist. Of these there are, so far as I can find, thirty-eight; fourteen in this country and twenty-four abroad. From this number may be subtracted three, very briefly and vaguely said by Dr. Robert Hamilton to have been shown to him by Prof. Tilanus, in Amsterdam. On similar grounds we may leave out, as not described, one said by Chelius to belong to himself, and another to Sœmmerring. Still another, exhibited by Dr. Snow Harris to the British Medical Association, in Dublin, in 1836, was admitted even by himself to be an example of chronic rheumatic arthritis, and not fracture at all; so that it may be set aside. We have then for analysis eighteen foreign cases.

Hamilton mentions thirteen specimens claimed to be of this character by surgeons in our own country. One case has escaped his notice, published in the *American Journal* for January, 1847, by Dr. Geddings, of Charleston, S. C.; thus making fourteen. Three of these are merely mentioned, and cannot be discussed; two are confessedly open to great doubt; and in one specimen, without history, in the Wistar and Horner Museum at the University of Pennsylvania, the bone has been found on section to be simply changed in shape, and not fractured at all. Hence we have left only eight which can be regarded with any positiveness. One of these is in Dr. Hamilton's possession, and he says that it is "of no inconsiderable pretensions;" but from the general tenor of his remarks on the subject, and from the manner in which he afterwards speaks of this particular specimen, it is evident that he does not regard it as altogether conclusive. Of this bone Fig. 5, taken from Dr. Hamilton's well-known and valuable work, represents a section. Another is in the Mütter Museum,

Fig. 5.

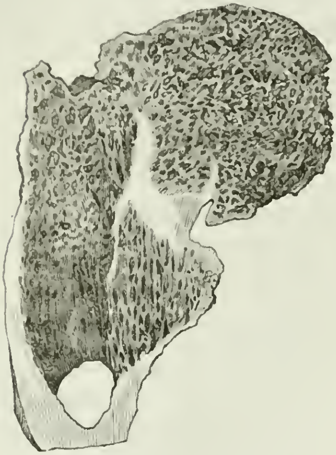


Dr. Hamilton's case.

and is found on section (not made until recently) to bear the general characters of the specimens we are now considering; in other words, there is no convincing proof of the original fracture having been within the limits of the synovial membrane.

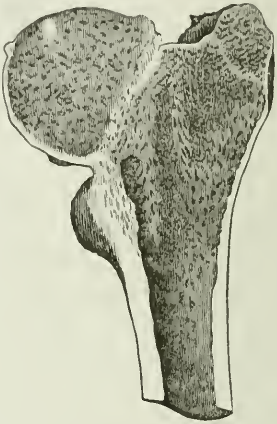
Of three of the remaining six united fractures, I am enabled to insert representations. Dr. R. D. Mussey, in a paper published in this Journal for April, 1857, gave detailed accounts of three cases in which he thought the patients had sustained fractures of the neck of the femur within the capsule; union by bone had taken place, as may be clearly seen in the wood-cuts (Figs. 6, 7, and 8) which accompanied his descriptions.

Fig. 6.



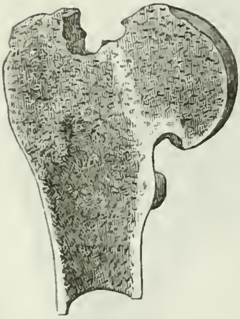
Dr. Mussey's first case.

Fig. 7.



Dr. Mussey's second case.

Fig. 8.



Dr. Mussey's third case.

Two other specimens have been represented by Prof. March, of Albany, in a paper read before the New York State Medical Society in 1858.

The case claimed by Dr. Geddings, of Charleston, is merely described.

Let us look for a moment at the specimens supposed to exist abroad. Of these (eighteen in all), thirteen are represented; those of Langstaff, Chorley, Adams, and Jones are given in R. W. Smith's work, before quoted; they will therefore be accessible to many readers of the Journal. Field's is depicted by Armstrong. Three others, Nos. 177, 188, and 189, in the Musée Dupuytren, are represented in the splendid lithographic plates of the catalogue raisonnée of that collection. Hodgson gives engravings, with descriptions, of three cases in *Guy's Hospital Reports* for 1851. Zeis, of Dresden, has represented and described two specimens, one in his own possession and one in the museum of the Medico-Chirurgical Society in Dresden. All of these correspond very closely to the specimens shown in the cuts of Dr. Mussey's cases, except the last (No. 189 in the Musée Dupuytren) where the trochanter minor has evidently been detached, and the fracture cannot, therefore, be, with any reason, called intra-capsular.

Of the other specimens, those, namely, of Swan, Brulatour, Stanley, Bryant, and Fawdington, we have descriptions merely. With one exception—Stanley's—they all seem to me, upon careful scrutiny, to bear the same explanation which I have proposed for the American cases.

Stanley's case is so remarkable as to merit further attention here. It occurred in a young man æt. 18, who fell from a loaded cart upon his right hip. There was no shortening or crepitus; the limb was bent to a right angle with the pelvis, and everted; abduction was difficult. Under the idea that the head of the femur was dislocated into the thyroid foramen, attempts at reduction were made, but without perceptible effect. He died of smallpox three months afterwards, and the bone, being removed, was placed in the museum of St. Bartholomew's Hospital, in the catalogue of which,[1] prepared by Stanley and revised by Paget, it is thus described:—

> "No. 50. Portion of a femur, exhibiting fracture of its neck. The plane of the fracture is vertical, extending from the upper margin of the head straight downwards through the neck to the outer part of its lower border. Bristles are introduced between the fractured surfaces, which are in close apposition, and it will be observed that the attachment of the capsule to the bone is entirely beyond the line of fracture. That portion of the neck of the bone which remained connected with the trochanters is partly absorbed, and the union of the fractured surfaces, although not complete, is by osseous matter inlaid between them."

Here, so far as the description goes, and it is a pity no representation of this specimen has ever been published, it would seem as if there had been in reality a fracture within the limits of the synovial membrane, but without rupture of the fibrous investment of the bone; under such circumstances, the fragments being held in absolute contact, and the vascular supply being maintained, bony union must be regarded as not only possible, but probable. It seems strange that the fibrous investments of the cervix should have withstood the force implied, although not expressly stated, to have been used in the attempts at reduction of a supposed dislocation.

This specimen is one of the three admitted by Malgaigne[2] as genuine examples of bony union of fractures within the joint; the others being Swan's, and one in the Musée Dupuytren (No. 188).

Swan's case is so readily accessible, being quoted in Dr. Hamilton's work, that it need not be repeated here. But as the other can only be found in the catalogue of the Musée Dupuytren, of which there are only two or three copies in this country, I may be excused for introducing a translation of the description as therein given:—

---

[1] Vol. i. page 126.

[2] Traité des Fractures et des Luxations, tome i. p. 678; Translation, p. 545.

"No. 188. Upper extremity of a fractured femur of the left side; specimen obtained from the Société Anatomique.

"This bone is small, but presents a consistence, a thickness, and a texture altogether normal. The fracture is intracapsular, seated at the junction of the neck and head; the latter is carried downwards and backwards, so that (1) its upper part is on a level with the greater trochanter, and its lower is separated from the lesser by only about a centimètre (⅓ inch); (2) posteriorly there is a groove of only four or five millimètres (⅛ to ⅙ inch) between it on the one hand, and on the other the posterior edge of the greater trochanter and the intertrochanteric ridge; (3) the anterior lip of the fractured surface, which belongs to the neck, is free, and forms an irregularly projecting crest, the presence and aspect of which leave no doubt of the existence of a fracture; (4) the posterior part of the neck and its lower angle are buried in the spongy tissue of the head; (5) lastly, the fractured surface of the head bears, below and behind, upon the compact wall of the neck. The two fragments seem to be united to one another, without other deformity than that due to the displacement mentioned. Some inequalities in the anterior face of the neck seem to be caused by the deposit of a small quantity of new bone. Posteriorly, along the intertrochanteric ridge, may be noticed also a small bony line, shaped like a crescent, its concavity turned inwards towards the head. These are the only traces of consolidation at the surface of the bone.

"A double vertical section of this specimen shows a continuity so complete between the fragments that it seems as though no fracture had existed. Still one can make out clearly a white shining line of compact tissue, continuous with the compact wall of the shaft, and running up to the middle of the cellular texture of the head; now this compact line is nothing else than the neck of the femur, driven, as before explained, into the middle of the head, which forms, as it were, a cap for the outer fragment. Besides, the cellular texture of the head and neck is condensed, and exhibits a sort of hypertrophy not common to it, and which indicates a special process in the two fragments.

"We regard this specimen as an incontestable proof of the possibility of a complete cure of intracapsular fracture of the neck of the femur, and are persuaded that all who examine it with care will be of the same opinion."

Notwithstanding the great authority of MM. Lacroix and Denonvilliers, by whom the catalogue of the Musée Dupuytren was prepared, and the indorsement of M. Malgaigne, I cannot, from the study of this description and of the corresponding plate in the atlas, feel satisfied that the fracture here was wholly within the capsule.

The existence of a specimen in which no absorption of the fragments should have taken place, but a distinct line of solid bony deposit should firmly join them, after maceration and section, would be the only positive proof of the possibility of this kind of union in intracapsular fractures of the cervix. Such a specimen has never yet, within my knowledge, been ascertained to exist. In concluding this paper, already too long, let me quote the very practical remarks of Maclise :—[1]

> "I must for my own part acknowledge that, in the anatomical condition of the bone when entire, I cannot discern any structural difference between the intra and extracapsular parts; nor can I conceive why (physiologically or pathologically), the fragments within the capsule should not unite by bone, while the fragments immediately outside the capsule should, while it is obvious that in both cases the upper fragment is put equally beyond the pale of a normal amount of vascular supply. It would seem, from what I can understand in canvassing the opinions of authors, that the circle of attachment of the capsular ligament to the base of the neck of the femur is as a barrier set between the intra and extracapsular parts—between the possibility and impossibility of osseous union taking place (?), but though the facts may appear in accordance with such doctrine, it is nevertheless true (*apparere non facit esse*) that facts may be misinterpreted and presented to our notice in a state as little conducive to the cause of truth as if they had never been recorded. If the fracture within the capsule physiologically defies osseous union, while the fracture external to it may unite by bone, then it should follow from these facts that, in the case of fracture through the axis of the upper part of the femur, from the head to the great trochanter inclusive, only a half union (extracapsular) can take place between the fragments, but I have in my researches seen such a fracture completely united by bone; and this, as a fact, is sufficient to persuade me that, not to the supposed difference in the condition of the fragments within and without the capsule, but to our inability to effect nice coaptation, and to secure immobility, are to be ascribed the many failures in promoting osseous union."

In the hope that some readers of this paper may be enough interested in the views therein stated, as to intracapsular fractures, to test them by reference to the published accounts, the following list of these, in order of time, is appended :—

Foreign.—Swan : one specimen, fully described. On Diseases of Nerves, etc., p. 304, 1820. Quoted by Prof. R. W. Smith.

Langstaff: one specimen, described and illustrated. Med.-Chir. Trans., vol. xiii., 1827; quoted also in Amesbury's work on Fractures, etc., and by Prof. R. W. Smith.

Brulatour: one specimen described. References the same.

Chorley: one specimen described and represented in Amesbury's work, and by Smith.

Field: one specimen. Reference same as last.

Stanley: one specimen, described in Med.-Chir. Trans., vol. xviii., 1833; quoted by Prof. Smith.

Fawdington: one specimen, described in London Med. Gaz., 1834; quoted in Amer. Journal, vol. xv. p. 534.

Harris: one specimen, described in Dublin Journal, 1835; quoted in Amer. Journal, vol. xviii. p. 246.

---

[1] On Fractures and Dislocations; Commentary on Plate XXVIII.

Adams: one specimen, described and represented in Cyclop. of Anat. and Physiol., art. Hip-Joint; also in R. W. Smith "On Fractures," etc., p. 59.

Jones: one specimen, described and represented in Med.-Chir. Trans., vol. xxiv., 1841; also in R. W. Smith's work, p. 62.

Musée Dupuytren: three specimens, described in Catalogue raisonnée (1842), and represented in the Atlas of the same.

R. Hamilton: three specimens, merely mentioned, London Med. Gaz., 1843; quoted in Amer. Journal, vol. xxxi. p. 470.

Sœmmerring and Chelius: each one specimen, merely mentioned in Chelius' work, vol. i. p. 621 (American ed., 1847).

Hodgson: three specimens described and figured in Guy's Hospital Reports, vol. vii., 1851.

Bryant: one specimen, described in Brit. Med. Journal for 1857; quoted in Memphis Med. Recorder, 1857, p. 108.

Zeis: two specimens, described and represented, "Description of Two Specimens of Intra-Capsular Fracture and Union by Callus," Dresden, 1864.

American.—Geddings: one specimen, described in the Amer. Journal of the Med. Sciences, April, 1847.

Mussey: three specimens, fully described and represented in Amer. Journal for April, 1857.

Parker: one specimen, described by Johnson, New York Med. Journ., 3d series, vol. ii.; quoted by Hamilton.

March: two specimens, fully described and represented. Trans. of New York State Medical Society for 1858; quoted by Hamilton.

Colby: one specimen, described by Hamilton, *op. cit.*, p. 371.

Hamilton: one specimen, described and represented *op. cit.*, p. 372.

Pope: one specimen, merely mentioned by Hamilton.

Mütter: " " " " " "

Webster: one " " " " "

H. H. Smith: two specimens, mentioned in Smith's Surgery, vol. i. p. 610; also quoted by Hamilton, with remarks by Johnson, p. 364.

ART. VI.—*On the Treatment of Remittent and Yellow Fevers.*

By J. D. MILLER, M. D., Surgeon U. S. N.

I SUBMIT the following simple statement of facts which have come under my observation in relation to the treatment of remittent and yellow fevers:—

I joined the United States Frigate Colorado, then blockading the port of Mobile, about the 22d of August, 1863, and found a malignant fever existing on board, the first case of which made its appearance on the 10th of the same month, and had terminated fatally on the 16th with what was supposed to be "black vomit." Two days after I joined the ship the second death occurred, after five days' sickness. During the next ten days there were five deaths, after two, three, and four days' sickness—making seven in all. Each of these cases presented the following train of symptoms: An initial rigor followed by more or less febrile action; extreme debility; headache and pain in cervical and lumbar regions, and, in one or two cases, in the lower extremities; ischuria; constipation; hebetude; gastric irritation, and delirium. After the subsidence of the febrile paroxysm the skin became cool and moist, the pulse small and frequent, and black vomit ushered in death. The cadaver presented a deep, lemon-coloured hue, and emitted an offensive odour.

At this time becoming thoroughly disheartened by the result of the treatment with calomel and quinia, so generally adopted in American practice, and on which I had mainly relied, I determined to try a remedy which, though it is not new, is far too much lost sight of—the *hot* bath. I had the bath-tub brought to the side of the patient's cot, supplied it with water drawn from the boilers and reduced to the temperature of 114° F., immersed the patient in it to the chin, and, with my fingers on the wrist, carefully noted the following results: The pulse immediately became fuller, softer, and less frequent; the pain in the head and back abated; the lethargy passed off, and the ischuria was relieved—micturition taking place either in the bath-tub, or very soon after leaving it. When the water felt no longer hot to the patient—say after the expiration of five minutes, and within ten—he was lifted from the tub, wrapped in a blanket without drying him, replaced in his cot, covered with other blankets, and left in that state to perspire freely for several hours. I found that the change in the patient was permanent. Not a single symptom regained its ascendency. The pulse remained good, the hebetude disappeared; the pain in the head, back and limbs gradually ceased, the renal excretion went on regularly, and the extreme lassitude gave place to returning strength.

On the morning of the second day following the bath I gave whiskey by the tablespoonful, every hour, in double the quantity of water, to the extent of half a dozen spoonfuls, and if the bowels had not been previously opened, I gave the oleaginous emulsion, continuing the whiskey on several consecutive days, to the same extent. This constituted the whole treatment, and the patient was walking about at the end of a week, complaining only of debility, and with all his functions in a normal state. I wish it to be understood that the case which I have described gives the history of every case thus treated. The last death occurred on the 4th of September, and at that time there were several cases apparently slipping away under the same symptoms. They were all put into the hot bath, and *all* recovered. At the time, I hesitated to attribute such marvellous efficacy to so simple a remedy. I thought of all possible coincidences which might have had something—perhaps everything to do with the result, and was unwilling to assert the involuntary conclusion of my own mind. I waited for further evidence.

On the 26th day of April, 1867, a man died of yellow fever on board the Frigate Susquehanna, then cruising in the West Indies. Several cases followed this death, presenting the same symptoms, and again I resorted to the hot bath, and with the same happy results. I do not feel at liberty to withhold any longer this publication of my experience, if only for the benefit of the medical officers of our naval service, who have to encounter this formidable disease. If yellow fever be not a distinct disease of isolated character, but merely a malignant type of ordinary remittent fever, developed by climatic, or local causes, as many of the profession think, then it follows that remittent fevers may be successfully treated in the same way.

The first man put into the hot bath on board the Susquehanna had diarrhœa, with frequent, watery dejections. As in the former cases the first effect was to enlarge the pulse and reduce its frequency. Very soon, however, it became suddenly depressed, and he expressed a wish to be taken out. I instantly had him removed from the tub, but the diarrhœa was checked, and the recovery was not less favourable than in other cases, though rather more protracted.

It ought to be unnecessary to enjoin a personal superintendence and care in this treatment of fevers. It is all important that the water should be as hot as the patient will bear it. The physician's fingers should be on the pulse from the moment he is put into the tub, and when taken out he should be enveloped instantly in blankets, and carefully watched that he may not throw them off under the extreme discomfort of the sweating process.

Art. VII.—*Three Cases of Ligature of Femoral Artery: Two Recoveries.*—At Mower U. S. A. Hospital. By W. P. Moon, M. D., Philadelphia, Pa.

Besides the cases of ligature of femoral artery here reported, there were one or two others at Mower Hospital, of which I have no detailed account. The rate of mortality usual in this operation, like that of amputation of the thigh, which bears about the same rate, throws a gravity and mournful interest about it not common to operations which result in a smaller death-rate.

At times, when we lost many of our most interesting cases, those upon whom we were compelled to perform the more critical surgical operations and bestow most care, or watch in the more dangerous diseases, it seemed to me that our losses were fearful—and I became almost discouraged. But after comparing our losses with published statistics, I found comfort in the fact that they were not even so great as commonly reported in military practice, and not greater than in civil service, in our best hospitals.

We are indebted for our success in this particular to the admirable location of the hospital, the salubrious surroundings of which, and the pure, healthful, invigorating air, are *constantly* enjoyed by the sick and wounded.

Case I.—H. H., 7th Wis. Vols., wounded on July 1st, 1863, at the battle of Gettysburg, by a minié shot, which entered the upper and outer third of left thigh about four inches below the great trochanter, passing downwards and inwards, was extracted from the anterior and inner face of the thigh, four and a half inches above the condyle. When admitted, twelve days after being wounded, the incision on the front of the thigh was nearly healed, a small orifice only remaining from which blood was slowly oozing. Twice previous to his admission there had been quite a hemorrhage which had been stopped by pressure. Upon examination there was found a tumour of considerable size, which the man said had but just formed between the wounds of entrance and extraction on the posterior part of thigh, but very deep in the muscular structures, due, no doubt, to the accumulation of blood.

Sept. 13. Profuse hemorrhage came on through rupture of deep traumatic aneurism on one of the deep vessels of the thigh, demanding surgical interference. An incision was made over the centre of the tumour, the hemorrhage being controlled by compression of the femoral, patient under the influence of chloroform. Turning out the clot it was found that the deep femoral was ruptured, necessitating ligation of the femoral, which was performed by the usual operation, just below Poupart's ligament, near the base of Scarpa's triangle. Reaction from chloroform very slow; patient extremely weak and exhausted from loss of blood; pulse frequent and feeble; stimulation freely employed in the shape of brandy. The day following there began to be a gradual improvement in general aspect, and in the condition of wounds under a generous diet, stimulant and tonic treatment. Tinct. chlor. ferri, quiniæ sulph. ter die, alternated with brandy, milk, and beef essence, every two hours. The wounds were dressed with yeast poultice sprinkled with sol. zinci chlor. gr. iij, aquæ f℥j, as the discharge of pus became profuse and offensive.

20th. Wounds improving; pulse less frequent with more fulness and volume.

By the first week in November the wound of ligation had healed, and all the indications were favourable until, Nov. 23, an abscess began to form in the posterior part of the thigh between the ham-string muscles. This was opened the next day, having been poulticed in the mean time, and its contents evacuated through the wound, which soon healed again.

Nov. 28. Cicatrix of wound of ligation slightly ulcerating, but patient improving under continued building-up treatment. Temperature of limb some considerably above the natural condition, though much reduced in size.

Dec. 10. Abscess in thigh again formed, requiring opening.

Jan. 15. Wound of ligation healed, abscess nearly well, and wound of entrance closed. There is some induration in the immediate vicinity of this wound.

Feb. 2. Seized with a severe pain and swelling in the region of the saphenous opening, *right side*, which proved to be from an enlargement of the lymphatics. Tinct. iodine and tinct. aconiti, in combination, were applied, followed by flaxseed poultice and f℥ss sol. morphiæ administered.

The day following there was little pain or tenderness in the parts, but the limb was swollen and inflamed, with an erysipelatous appearance developing. Lead-water and laudanum applied to the entire limb, and tonics and stimulants renewed.

4th. Continues about the same with high febrile condition, bowels constipated. R.—Hyd. chlor. mit. gr. iij, pulv. podophyl. gr. ss, at once, followed by a second dose if this does not operate. Patient vomited during the night and is considerably exhausted. Cold flaxseed mucilage and sol. bromine, gtts. x to aquæ f℥j, sprinkled over the lint applied to the limb. At night sol. morphiæ, ʒij, given.

7th. Opened abscess just above external malleolus, followed by improvement in the erysipelatous and inflammatory condition, although there remained considerable œdema of the limb. This was much benefited by bandaging from the foot up, leaving an opening at the ankle for the application of the poultice. This abscess soon healed, and another formed in back part of the thigh, but this closed in a few days after being opened. From this time the case progressed favourably, without any more trouble, although it was not until April or May that the patient was able to get about, on account of the extreme exhaustion and loss of flesh and strength he had suffered.

The limb had become very much emaciated, and did not regain much of its natural temperature or size until summer, when a gradual return to normality began to develop. Patient going about on crutches. It would still be months before he could bear his weight upon the limb.

In the latter part of summer he was discharged, using his crutches yet, but endeavouring to bear some burden upon this limb, with every prospect of regaining its use.

Case II.—J. S., private, Co. H., 148th New York Volunteers, was wounded at "Battle of Cold Harbor," Va., June 3, 1864, and admitted to hospital June 15, from Washington. Flesh wound lower third left thigh, ball entering the inner side of the limb, passing upwards and outwards, extracted from the wound of entrance. When admitted the wound exhibited a tendency to slough; patient restless, feverish, and considerably prostrated. Wound injected with a weak solution of bromine, gtt. 10 to f℥j of water, as generally used in solution in the hospital. Porter or brandy, quinia and iron freely given, with extra diet.

June 26. Not much improvement. Bromine gtt. 30 to f℥j aquæ used in dressing the wound. Tonics continued.

27th. Considerable apparent improvement.

July 1. Sloughing commencing to burrow deeply; a stronger solution, one-half water, was applied to the wound to produce an escharotic effect, the slough having been previously cleaned out. The ordinary bromine solution was used as an after dressing applied on lint. Had diarrhœa for which an enema of gtt. 30 tr. opii was given at bedtime.

9th. Much improvement in wound and general health, with appetite returning. Amount of stimulants reduced, and smaller doses of tonics given.

24th. Very unexpectedly, while the wound was being dressed, hemorrhage occurred from the femoral artery. The patient was improving in every particular, giving us hopes of a speedy recovery. This was *fifty* days after the injury. The loss of blood did not exceed four or five ounces, happening, as the hemorrhage did, at the dressing hour. Making an incision for about four inches in a line with the outer edge of the sartorius, from the upper part of the slough, the femoral was ligated on the *proximal* side of the wound *only* near the middle third.

25*th.* Chloroform given, and pure bromine applied to wound, which was again beginning to slough. Patient weak, pulse 110. After midnight rested well. Recourse again had to milk punch, such nourishing diet as he could eat, and beef essence given in large amount during the day. Leg below knee *cool* for two days, after which it became unnaturally warm, as patient improved.

28*th.* Another hemorrhage of some four or five ounces, this time from the *distal* side of the wound, showing that the circulation by anastomosis was set up.

The artery was found in the lower part of the wound readily, and tied in the lower third of its course. This is the second instance where hemorrhage set in at Mower, owing to a ligature being placed *only* on the proximal side of the wound contrary to the constant practice and teaching of some of the best surgeons, Guthrie and others, in opposition to Hunter.

After this the case went on improving, and, like the former, after lingering for months, to recuperate and gain strength to get about, was discharged, slowly gaining the use of life and limb.

Case III.—C. D., private, Co. A, 47th Pennsylvania Volunteers, wounded at the "Battle of Cedar Creek," Va., Oct. 19, 1864, and admitted to "Mower" Hospital, Feb. 10, 1865. Minié ball entered anterior upper third left thigh, impinging against the femur upon its inner surface, denuding it slightly of periosteum, causing a contused wound of bone, then passing to the posterior part of the thigh. Removed by wound of entrance. What had been the course of treatment other than cold water applications to the wound, we did not learn. When admitted the wound was much inflamed, and sloughing badly. The slough was cleaned out, patient under chloroform, and bromine thoroughly applied. We tried to give this remedy a fair trial in this hospital, but were not as favourably impressed in its favour as a detergent or escharotic as Dr. Goldsmith. In some cases it acted like a charm—but in others did no good, if not injury. In this case the sloughing was checked, and the man improved rapidly under ordinary treatment, being able in a few days to get about the ward on crutches.

Our usual plan for the use of bromine was to first clean out the slough well, then apply to all parts of the wound, either by syringe or on sponge, a solution of bromine of from gtt. 10 to gtt. 30, aquæ f℥j, following this with a dressing of solution permanganate potassa of like strength, or a light flaxseed poultice. If this did not clean the wound of slough, the pure bromine was used, followed also by an emollient dressing.

We were also disappointed in our anticipations respecting permanganate potassa, which came to us at one stage of the war with such glowing recommendations, as an aid in removing sloughs from gunshot wounds, and curing hospital gangrene. We found that it became so rapidly decomposed that its effect was but temporary. As a simple wash, it answered in solution very well.

Feb. 23. Still doing well, the wound healing, and patient improving up to the night of the 26th, when the parts were found to assume an angry and inflamed condition. Upon inquiry, we learned that a pass had been given contrary to orders; that he had been walking about the city during the day, and returned to his ward in this state as a consequence. The result was, sloughing again ensued worse than before, with accompanying irritative fever.

March 3. Wound sloughing badly, patient feverish, has no appetite, and is unable to sleep on account of pain in the wound. The same treatment was adopted as before, but destructive inflammation went on deeply and rapidly, and on the 4th of March hemorrhage occurred from the external circumflex to the amount of 8 or 10 oz. With some considerable trouble the profunda femoris was secured deep in the wound, and a ligature placed about it.

Reaction from chloroform prompt, and patient encouraged. He had two slighter bleedings during the night, which had been controlled by his ward-surgeon, Dr. Goddard, by plugging the wound. At this recurrence he became very much alarmed, but as soon as he understood that the artery was tied, and there was no immediate danger, he became assured, resting calmly and quietly after the operation. After persistent efforts in search of the exact location of the hemorrhage, we gave up the attempt, hoping our present effort would succeed. We were unable to find the distal end of the open vessel without cutting down into healthy structure, and trusted to one ligature.

8th. Sloughing checked in outer side of the wound, and healthy granulations springing up; but patient does not rally; is feverish and restless, with pulse frequent and feeble.

10th. At 12 o'clock, midnight, we were called up to the case, and found that the femoral had given way, causing a loss of 15 oz. to 20 oz. of blood. Ligated the femoral at middle third in healthy structure; patient surviving this operation only three days, gradually becoming more and more feeble until he died of exhaustion. The slough by this time had become extensive, burrowing wide and deep until one-third of the thigh became involved, and it is doubtful if the man could have lived had there been no hemorrhage.

By many I believe these sloughs were considered as hospital gangrene, about which we heard considerable. I did not so regard them. In fact, I only saw what I should consider true gangrene either wet or dry, in more than five or six instances out of some 20,000 patients seen during the war. Persons are warranted, however, by the descriptions given by some writers on military surgery, in calling a bad sloughing gunshot wound hospital gangrene.

ART. VIII.—*Simultaneous Dislocation of Both Hip-Joints. Reduced by Manipulation.* By J. M. BOISNOT, M. D., Philadelphia.

ON the 22d of September, 1865, I was called to see a case of injury, which proved to be of considerable magnitude; the manner in which it was received, the course pursued for its relief, and the result are interesting.

Mr. W., æt. 40, was standing on the sidewalk awaiting the descent of a bundle of wool weighing over 100 lbs. from the fourth story of a factory; desiring to place it in his wagon, he prepared himself to receive it in his arms and prevent its reaching the pavement; with that view, he was standing on the east side of Sixth Street facing south, with his left side toward the building on that side of the street; in order to receive the descending bundle he would naturally raise both hands, while his left foot would be somewhat advanced and the right placed back a little and *turned outward.*

The bundle had scarcely cleared the doorway when it became detached from the hook of the hoisting rope, and descended upon the head of Mr. W., felling him full length upon the pavement; being unable to rise, he was picked up and placed on a settee in the same position he occupied underneath the bundle, *i. e.*, on his right side; he was in this position when I first saw him, and detecting dislocation of the left femur upon the dorsum of the ilium, I directed that he should be carried home and placed upon the floor. As he was a man of nearly 200 lbs. weight and of great muscular development, it was thought advisable to give an anæsthetic to prevent the great rigidity following each attempt at handling; the quantity and quality are specially referred to in the accompanying letter from Prof. Maisch, who tested both anæsthetics before they were used.

Assisted by Surgeon Du Bois, U. S. A., Dr. Gruel, and Prof. Maisch, of this city, besides others whose names I do not recall, I proceeded to reduce the aforesaid dislocation in accordance with Reid's plan, by manipulation, which I consider but a simple though a very correct method, of bringing the rounded head of the bone to rest upon the edge of the cup-shaped depression which is to receive it, whence it must proceed to its natural position if it be sufficiently supported; in other words, the difficulty in reducing any dislocation, is, that the *neck* of the bone is impinged against some projection, and *only that rotation* is requisite which shall bring the *rounded head* there instead.

Entire relaxation having been produced by ether, the reduction from off the dorsum of the ilium was rapidly effected.

Stimuli were given, as he seemed somewhat overcome by the anæsthetic, and when consciousness returned he was about to be placed upon his back in order to bring both legs together; this being impossible, an examination as to the cause revealed the fact that the right femur was dislocated also, the head resting upon the pubes and forming a distinct prominence there.

By this time consciousness had returned, and the pulse became normal. The patient was then informed of his condition, and the necessity for further anæsthesia; his consent given to the latter, ether was administered as before; this failing in effect as also the supply on hand, the chloroform provided was resorted to; this was used in small quantity with free access of air at first, but the length of time consumed, with continued muscular rigidity, induced me to use more, and confine it more closely to the patient; embracing the first opportunity afforded by relaxation as communicated through the limb which I held in my hands, I restored by rapid manipulation the head of the bone to its natural position, almost at the same instant that the patient commenced snoring; at this juncture, the respiration, pulse, and general appearance required attention to restore their healthful functions and condition; the use of ammonia, ice, and hot water which I had had provided, were used alternately, followed by stimuli when he was sufficiently aroused to swallow.

The usual care was taken after this as after all other reductions; such as quiet, single position, anodynes, anodyne liniment, &c. On the 20th of October following he was discharged, entirely well, and from that time has enjoyed as good health and use of his limbs as before the accident.

In reference to the exact manner in which this accident produced its effects, it may be stated, that a bundle falling and striking the left side of the head and neck would tend to double up the body and complete the twist (so to speak) which was made in taking the braced position; and the inclination would be forward and to the right side for the upper part of the body, and backward and to the left, for the pelvis; the left knee taking position in the right popliteal space when the body was pressed to the pavement; this will explain how and why the head of the left femur was thrown upon the dorsum of the ilium and that of the right upon the pubes. The following letter from Prof. Maisch, previously referred to, explains itself:—

"In answer to your inquiry regarding the anæsthetics used in September, 1865, in a case of dislocation of the hips, I would respectfully state that both ether and chloroform were perfectly pure and of officinal strength, the former having the specific gravity of .728, the latter 1.492.

"The quantity of ether used was half an avoirdupois pound, or nearly twelve fluidounces, and of the chloroform, about one and a half ounce or one fluidounce was administered."

It would have been impossible to have reduced these dislocations without anæsthesia, and yet it became at one time a serious question as to whether we should persevere until it was obtained or not.

The brandy which was administered between the reductions was in large quantity, and no doubt retarded the action of the chloroform, and yet, I believe it would have been unwise as well as unsafe to have proceeded without it.

An important era in the use of anæsthetics will that be, which shall afford us the method of a combination, which can be regulated in its administration, and made applicable to the peculiarities of the patient.

ART. IX.—*Cephalic Version in Shoulder Presentations.*

By R. STEWART, M. D.

DR. WRIGHT, of Cincinnati, asserts that cephalic version is always practicable. Professor Penrose, of this city, in citing an instance, in 1856, in which he tried it, expressed his gratification at the facility with which he had succeeded in effecting it. Of the following seven cases, three occurred in my own practice, the others were in consultation.

As vertex presentations are more favourable than breech, if facility of operation be the same, version by the head would be preferable to that by the feet. It is very evident that if there be a large quantity of amniotic fluid with the membranes unruptured, considerable room will exist for the mobility of the child. The patient must, therefore, be placed in such a position as shall permit the child to gravitate towards the fundus of the uterus, and tend to bring the breech towards that side of the mother upon which the head of the fœtus reposes, and also retain the water where it will favour the manipulation. This can be done by raising the hips higher than the shoulders, and both so elevated as to permit the abdomen to hang on *that side* towards which we wish the breech to gravitate. The mother will, therefore, lie upon the side to which the head of the fœtus is inclined. The operator should use, in the vagina or uterus, the right hand if the head reclines to the left side, and *vice versa*—the other hand being placed upon the abdomen, to act either on the breech or head, as may be required. Thus, in right dorso-pubic presentation, the patient should lie upon the *left* side, the hips higher than the shoulders and the abdomen falling to the left side. In the absence of pain, the operator should push the shoulder with the fingers of his *right* hand towards the right side of the mother, press upwards, and endeavour to rotate the shoulder slightly backward, towards the spine of the mother. These movements insure, first, the drawing of the head to the centre of the pelvis, which is aided by the left hand pressing against the abdomen opposite the fœtal head or the breech; secondly, the raising of the shoulder above the brim of the pelvis, aided by the whole uterus gravitating from the raised hips, so that the head may take its place; and, lastly, the rotation of the shoulder will aid in bringing the head into the pelvis in a second vertex position. Should the rotation be too great, as might happen when simply pressing against the shoulder, and should there be a great amount of water, the head might be brought into the pelvis more nearly like a fourth, than a second vertex presentation.

CASE I. Summoned to see Mrs. R., aged 42, second labour; the first a breech presentation, two years previous; found the pains regular; os uteri soft, slightly dilated, just admitting the passage of the finger; presentation could not be ascertained. I left, expecting to be called in the night. In the morning visit, found her complaining of the severity of the pains; but labour had not advanced; gave morphia, which checked the pains to a great degree that day and nearly all night; they returned powerfully next morning. By examination I felt the right shoulder against the pubis, a little to the right of the symphysis; there was evidently a large quantity of water, as I could toss the shoulder up with my finger. At 12 o'clock considered the os dilatable, so as to admit the passage of the hand through it. Placed the patient in the position described above, then passing the right hand in the vagina, the fingers easily reached the shoulder, which I pressed quickly and forcibly upwards and to the right backwards; at the same instant pressed with the other hand opposite the child's head. By these combined movements the shoulder appeared almost to bound from the fingers, and at scarcely an appreciable interval the vertex lay upon them. I then withdrew the hand from the vagina, the waters gushing out, but still retained the other against the abdomen. As soon as the water ceased flowing, re-examined, and found a fourth vertex presentation which I immediately changed into a second. The child, a large female, was born in about twenty minutes from the commencement of turning.

Should the membranes be ruptured, and especially if the child be tightly embraced by the uterus, or there be some complication requiring prompt interference, it will probably be necessary to pass the whole hand into the uterus, then with the thumb in the axilla of the fœtus, and the fingers around the acromion process, to draw the shoulder to the right, upwards and slightly backwards; and while keeping the shoulder in this position by the thumb, the fingers should be passed along the shoulder, the neck and head grasped and drawn over into the pelvis.

CASE II. Was sent for in haste to see Mrs. L.; found her losing some blood during pains, which were not severe; membranes not ruptured, and every indication of there being a large quantity of water, but the placenta was attached to the right side of the uterus, extending slightly over the mouth. As I could not by the finger detect the presentation, and yet heard the fœtal pulsations quite low, suspected something wrong. She was lying on left side; I sent for ergot; raised her hips, then passed the right hand into the vagina which brought on pain and flooding, and discovering a shoulder, I quickly passed the hand into the uterus, and placing the thumb in front of the shoulder of the fœtus, passed the fingers at once behind the neck and head, which thus brought the thumb more on the top of the shoulder, pressed on the abdomen opposite the breech, when, in one effort, the head was brought into the superior strait. A large quantity of water escaped; I kept my hand on the abdomen, and gave ergot. On vaginal examination I then found the head pressing tightly in the os uteri. Pains increased greatly; applied the forceps, the patient remaining on her side, when, after the lapse of considerable time and a great amount of effort, the child, a very large one, was delivered dead This was probably due to the separation of the placenta before the delivery of the head. Mrs. L. has a very narrow pelvis, and has had but one delivery without instrumental aid.

CASE III. Mrs. W., second labour; saw her in the evening; membranes not ruptured; pains regular and quite severe; remained in the house all night, during which time made several examinations, but discovered little progress. There was a "good show," and the os uteri very soft and dilatable. In the morning, feeling that there must be some fault in the position, I introduced the hand into the vagina, in doing which the membranes ruptured. I found the right shoulder presenting, but lying close to the spine of the mother. After feeling assured of the position, I attempted to draw the shoulder towards the right of the pelvis, without passing the hand into the uterus, but failed. I then passed the hand through the os uteri, and, in the interval between the pains, very slowly moved the shoulder to the right. Still found that I must make more tractile power than I was exerting on the shoulder alone; I then passed the hand over to the left, insinuated it around the neck and head, and with the other hand pressed on the abdomen against the breech. By alternately pushing upwards and backwards, with the thumb against the shoulder, and drawing the head over, the latter was gradually brought into a second vertex presentation. The difficulty did not appear due so much to the contractions of the uterus (for between the pains it was flaccid), as to the apparent impracticability of making the whole body of the child yield to the motions attempted to be given to the shoulder and head. It was born in about half an hour after it was thus engaged in the superior strait. It was a female weighing nine pounds. This was followed by a second child, a boy, which presented a breech, weight eight pounds. Both lived. Doubtless the difficulty in turning the first child was due to the presence of the other.

In left dorso-pubic presentations the patient should be placed on the right side, the left hand operating inside, and the right on the abdomen. The shoulder must be moved towards the left, upwards, and slightly rotated backwards.

CASE IV. Called to see Mrs. F. who had been in charge of a midwife; had been in severe pain the previous day and during the night; water evacuated, and the left shoulder presenting, tightly embraced by the uterus. Placed her on her right side. Etherized, and introducing the left hand, first operated on the shoulder at the acromion process, then passed the fingers around the neck and head, and while sustaining with the thumb on the shoulder, gradually brought the head into the pelvis in a first vertex. Introduced forceps, and delivered a living child.

In right dorso-sacral presentations the mother should lie on the right side, the left hand should be used internally, and the right hand on the abdominal surface; but if the shoulder were then to be raised and drawn over to the left of the mother and the head be brought into the pelvis, in the position it would then naturally assume, a fifth or fourth vertex presentation would result. And though these presentations could be changed with the lever when the vertex became engaged in the pelvis, yet it would be better to prevent this if possible. This can be done by first bringing the shoulder to the left, drawing the head to the pelvis, and then rotating the right shoulder along the front of the uterus, from left to right, which, when acting on the head, will change it into a first vertex. Or by grasping the left shoulder and rotating it along the front of the uterus from *right* to the *left*, which, when acting on the head, will change it into a second vertex.

CASE V. Requested to see Mrs. S., who was being attended by an old woman; water evacuated; right shoulder, at which the old woman had pulled quite extensively, supposing "all it wanted was to be aided a little," pretty tightly wedged in the pelvis. I etherized fully, and after very patiently working, at last succeeded in getting the head into the pelvis; then rotated the right shoulder, not perhaps more than one-quarter of a circle along the front of the uterus, from left to right, then acted on the head; converted it into a first vertex; applied forceps, and delivered a living child.

In left dorso-sacral presentations the shoulder should be raised and drawn to the right, bringing the head into the pelvis, then by rotating the left shoulder along the front of the uterus from right to left, and acting on the head a second vertex presentation would be produced; or the *right* shoulder might be grasped and rotated along the front of the uterus from left to right, which, when acting on the head, will convert it into a first vertex.

But the arm may be in the vagina, and perhaps the shoulder tightly bound by the uterus. To "return the arm" may appear an easy matter; but trial, where the uterus contracts around it, will probably satisfy the majority of operators that the "arm cannot be simply pushed up," unless regardless of the danger of lacerating the parts, or injuring the child. This can, however, be done by pushing the shoulder of the arm protruding in such a direction as shall rotate the child, so that the arm by this rotation shall be drawn in across the breast of the child; this rotation is to be continued until the elbow is made to enter the uterus, when the whole arm can be easily replaced. The next movement depends upon the position.

CASE VI. I was requested by Dr. G. to see Mrs. K., with a right dorso-pubic presentation; arm out. The Dr. had endeavoured to turn by the feet. Not being able to detect any fœtal pulsations, I thought the child dead. I introduced my right hand, pressed against the axilla, so as to raise the shoulder upwards and moved it along the front of the uterus, in a line not perpendicular, but directed a little to the left. This tended to bring the breast of the child from the back of the mother, *around underneath*, to the *front*. The arm was thus drawn across the breast sufficiently to replace it in the uterus; I then drew the shoulder from left to right of the pelvis, at the same time rotating the shoulder *backward*. Then while retaining the shoulder up by the thumb, with the fingers I drew the head in a second vertex; making pressure with the other hand on the breech or head, as the internal condition appeared to require. The Dr. introduced forceps and delivered a very large dead child. This was her second child; the first was a breech presentation, and the labour a very difficult one.

CASE VII. Was sent for to see Mrs. I., who was attended by a nurse, frequently acting also as midwife. Found the left arm of the child in the vagina, traced it to the shoulder, which was closely pressed into the superior strait—a left dorso-pubic presentation. The patient would not take ether; pains almost constant. With the fingers of the left hand in the axilla of the child, I pressed the shoulder upwards on the front of the uterus, in a direction somewhat to the right, which was very slowly accomplished, sufficiently, however, to get the elbow of the child into the uterus. I then attempted to reverse the rotation by bringing the shoulder towards the left, and at the same time turn backwards; but found that the contractions of the uterus were continuing the rotation of the breast to the front; and that the head was descending into the pelvis face forwards. I passed my fingers behind the head, flexed it on the breast, and brought it into the pelvis in a fourth vertex. The pelvis was large, and by means of the forceps I soon delivered a small child living.

In the dorso-sacral positions there is not the same tendency to produce a fourth or fifth vertex presentation in rotating so as to bring the elbow in the uterus. For if there be a right dorso-sacral presentation the accoucheur should press the right shoulder upwards, but backwards along the back of the mother, which thus turns the breast of the child from the front of the mother underneath to the back, drawing the arm in on the breast. Then after replacing the arm, he should grasp the left shoulder, and draw it over to the left of the pelvis; this, by acting on the head, will bring that part to a second vertex presentation.

The mothers, in the above cases, all did well. Five of the children lived; two were stillborn; one of these due to the separation of the placenta, the other from having been so long impacted in its position. All the mothers had had children previously. Two were second births, the previous ones having been breech. One was from the country (Mrs. I.), who said the two previous ones had been "wrong." From the large quantity of liquor amnii, I think two, those of Mrs. R. and I., could have been turned by the position and external manipulation alone. But the attachment of the placenta admitted of no delay in the one, and in the other, the patient had been in pain a long time; besides, if not successful, the latter would not probably have had the benefit of the water in which to turn. The influence of anæsthetics in restraining contractions was very marked in the case of Mrs. S.; and had Mrs. I. consented to the same, I do not think there would have been so much difficulty in manipulating. As to the relative feasibility of podalic or cephalic version, I am unable to decide, as I did not try podalic in any of these cases. The protrusion of the arm, when the os uteri contracts tightly around it, very seriously complicates cephalic version, and adds much to the manipulation in turning; whereas in podalic the difference is slight, even by some being preferred to non-protrusion. If seen early, both versions will probably be easy, and the cephalic be preferable. If late, and the case be complicated, though the manœuvring on the inside of the uterus may be nearer the os in cephalic version, yet it will probably be as extensive as in podalic, and it may, therefore, be as irritating in its effects.

Art. X.—*Case of Extraordinary Hypertrophy of Cervix Uteri.*

By J. C. Nott, M. D., Baltimore, Md.

The subject of this case, Mrs. ———, alarmed by the presence of an unnatural growth in the vagina, complicated with pregnancy, advanced to about the seventh month, and fearing serious consequences from her expected labour, was brought to Mobile by her mother about the last of December, 1866, for medical attention, from the interior of Alabama. She was first seen by Dr. Webb, of Mobile, who asked Dr. J. T. Gilmore to see her, and, the case presenting very anomalous symptoms, I was requested to take charge of it.

The following brief history was obligingly made out for me by Dr. Gilmore:—

"Aged twenty-one; mind very weak, and the facts were supplied mostly by her mother, who was rather a sensible old woman. Menstruation commenced at eleven years; married at twenty, husband lived but seven and a half months; conceived early in June, 1866; dark hair and eyes; bilious temperament; general health bad since her tenth year; prominent symptoms indigestion and nervous derangement; menstruation uninterrupted and healthy up to time of conception; greatly troubled with hæmorrhoids from 1862 to 1865; sickness from pregnancy slight for first three or four months, after which there was none at all. To use the language of the mother, the mouth of the womb had been 'down even with the world for the last four years,' and for the last four months had protruded a little beyond the vulva. Has suffered with pain in region of left ovary for six years; appetite morbid since tenth year; slight leucorrhœa occasionally; has occasional attacks of hysterical mania, during which she is for a day or two unruly, and even pugnacious; at other times she is quiet, rather melancholy and indifferent to all around her."

Soon after her arrival in Mobile I made a careful examination, and found the vagina filled with a large elongated body, the extremity of which protruded a little beyond the vulva; the extremity was broad, resembling a bloated os uteri, with a soft patulous os, into which the index finger, with a little pressure, was introduced for about an inch. Although presenting to the eye the shape and general appearance of the cervix and os uteri, the tissues were softer, more compressible and boggy than the normal tissue, as commonly seen.

I soon came to the conclusion very positively that I was dealing with a hypertrophied cervix, although it seemed almost impossible for the os uteri to project from the vulva at the seventh month of pregnancy, when the organ is usually carried up higher than it is in the unimpregnated state. I could not, however, be deceived in the diagnosis, for besides the patulous os, I could not only sweep my finger easily all around the projecting neck, but was enabled to touch the globe of the uterus just above its junction with the neck and feel at every point distinctly the motion of the fœtus in utero. The globe of the uterus, when examined through the walls of the abdomen, was of about the dimensions ordinarily seen at six and a half to seven months, and the motions of the fœtus here were also quite strong.

I then made exact measurements of the cervix, and found it to be three and a half inches long by about two in diameter.

February 17. I did not make any examination of the uterus again until yesterday, when, to satisfy myself more fully as to the position of the uterus, I placed her in the erect posture. The measurement of the cervix remained unaltered, being still three and a half inches in length, but it protruded more than an inch beyond the vulva. From exposure to the air it was desiccated, wilted, and somewhat diminished in size.

The labour was expected by her mother to come on in about two weeks, and we were anxious, from its unusual interest, that she should not get out of our hands before its termination. We were curious to know how this elongated neck would behave when called on to expand for the passage of the fœtus, and Dr. Gilmore was kind enough to see the case from time to time so as not to let it escape.

She, however, very suddenly and unexpectedly, with her mother, disappeared from the town, and we could not ascertain with certainty the direction taken. As she had come from the country under alarm to seek medical skill, we had no fear that she would leave town without our knowledge. On inquiring at the boarding-house, we were informed that some man, calling himself a doctor, had arrived and without delay took the mother and daughter out of town, without explanation, or asking to see the attending physicians.

There had been some little mystery about the parties before, which was not at all diminished by the circumstances just related. Some of the most knowing gossips came to the conclusion that the young woman had never been married, and that the Doctor aforesaid was responsible for the baby.

Dr. J. Marion Sims has said much about the difficulty, amounting almost to impossibility, of impregnating a uterus with elongated neck. The explanation in this case is very simple: It was necessary that the glans penis should press against and displace the broad truncated extremity of the cervix to enter the vagina. When, too, emission took place the semen would be projected into the orifice of the os, and in the direction of the perfectly straight cervical canal. The neck was so long and large as to fill the vaginal canal, and any pressure on the os would necessarily displace it in a right line. Now we cannot say what were the dimensions of the cervix before pregnancy, but it is presumable that at the seventh month no great enlargement could have occurred, from the fact that the os had been down "even with the world" for four years previous to conception and during pregnancy.

The rule of Dr. Sims, however, is not without exceptions. I have in my mind the case of a lady who suffered greatly for years with dysmenorrhœa, nervous derangement, etc., in whom the neck of the uterus was about the length, size, and shape of my index finger (which is of average size). She got married, soon became pregnant, and had one child, after which she lost her husband, and has since remained a widow.

The general rule, however, laid down by Dr. Sims, with regard to sterility as an accompaniment of the elongated conical cervix, holds good, and the case given by me in the last July number of this Journal is a good type of the class.

ART. XI.—*A Case of Reduction of a Completely Inverted Uterus of Four Years' Standing, by Means of Pressure and a Peculiar Mode of Manipulation.* By JOSEPH WORSTER, M. D., of New York City.

INVERSION of the uterus is happily of such rare occurrence that many accoucheurs, long in extensive practice, have never met with a single case. It is always an alarming event at the moment, and often speedily fatal. If the first danger be escaped, and the uterus be not speedily returned, this becomes exceedingly difficult, and the inversion is very often a source of distress which embitters or shortens life.

This displacement has been mistaken for a polypus, or, when due examination has not been made, has remained undiscovered even until after death. In some cases the uterus has spontaneously returned, after the lapse of a considerable time, to its natural condition, and women have afterwards conceived and borne children (Meigs' *Colombat*). But such a result is not to be calculated on.

A few cases are on record in which the inverted uterus has been returned after a period of twelve weeks, but then with exceeding difficulty. Drs. Emmet and Thomas, in this city, succeeded in returning one after a lapse of seven months, by a peculiar kind of manipulation. (See number of this Journal for January, 1866, p. 149, and April, 1866, p. 403.)

In the case which I am about to relate, this manipulation was also successfully adopted; which, as a new and important means of success, when practised with patience, perseverance, and endurance, both on the part of the physician and patient, and after an unusual period of duration of the inversion, merits to be put upon record, and encourages to future effort in cases hitherto deemed nearly or quite hopeless.

Mrs. S. J. S., daughter of a physician, consulted me in reference to an inverted uterus; doubtful whether it could be returned or would require to be amputated. She was of nervous temperament, well-developed, twenty-seven years of age; had been married at the age of twenty-one, and became pregnant thirty days afterwards, and had resided in Wayne Co., N. Y.

In due time, after a labour of nine hours' duration, she was naturally delivered, but was speedily attacked with a profuse hemorrhage which induced syncope, depending, no doubt, upon a partial inversion of the womb. After an interval of constipation of nine days, an evacuation of the bowels rendered the inversion complete.

The inversion was not discovered for a week, and was then mistaken for a polypus. Hemorrhage more or less had occurred during the period, *nearly four years*, which had elapsed previous to her coming under my care. Believing the return of the organ to its natural position to be impossible, and worn out by the suffering and hopelessness of her condition, she had resolved upon submitting to the amputation of the inverted uterus, and had repaired to this city for the purpose of having that operation performed. But, reflecting on the success of a previous case of chronic inversion treated by manipulation, on the danger of amputation, and influenced by the consideration that her naturally fine voice (she was an eminent vocalist) would suffer from the loss of her ovaries even if the amputation succeeded, I decided to attempt its reduction by means of the hand, aided by the relaxing anæsthetic influences of chloroform.

Before, however, resorting to this method, I determined to remove all additional sources of pain and irritation which might impede success, and proceeded to heal several superficial ragged ulcerations and abrasions which were patent upon the everted interior surface of the uterus, which organ was much enlarged, and protruding between the labia.

Nov. 3, 1866, 11 A. M. Assisted by my son, Dr. W. P. Worster, who administered the chloroform, I attempted the reduction manually. I introduced my well-greased left hand into the vagina and grasped the fundus uteri with the fingers, endeavouring, as much as possible, to lessen its lateral diameter. Thus grasping it between the thumb and fingers, I made strong pressure upwards in the proper axis, wedging it between the sides of the os and neck, which soon began to descend and surround the inverted fundus. At the same time I made, from above and behind the pubis, strong counter-pressure with the thumb and fingers of the right hand through the parietes of the abdomen, downwards into the centre of the depressed fundus and cervix uteri, which soon began to yield. The second finger of the right hand most successfully operating as a wedge, dilated the cervix until the finger in the centre of its circular ring met the thumb of the left hand within the vagina; using the thumb, at times, to reinvert the cornu after the manner of Noeggerath, and resorting occasionally to the method with which Dr. Sims, in a more recent case, had been successful in a few minutes.

This manipulation was continued for thirty minutes, when it was desisted from. The patient had lost much blood, and was much exhausted by the long continuance of an amount of pressure, which only those who have had a similar experience would suppose the uterus capable of enduring. The tenderness of the uterus and abdomen subsided in a few days, but not for some days longer was the manipulation repeated, in order again to effect the cicatrization of the renewed ulcerations, which again kindly healed under the nitrate of silver and a dressing of cotton saturated with glycerine.

8th, 11 A. M. I resumed the operation with increased confidence in the certainty and ease with which the damages inflicted would be repaired; the everted inner surface of the uterine cavity being smooth and healthy.

The patient lying upon her back, the limbs drawn up, and under the full influence of the chloroform, I again seized the protruded fundus with the two fingers of the left hand and thumb thrust into the right cornu, and by long and strong compression so diminished its size that I could carry it up much farther than before, and found that little had been lost by the delay. The bulk of the uterus within the embrace of the fingers had retained its position, and was much diminished, and could be now easily pushed beyond the grasp of the surrounding cervical ring. I also succeeded in more depressing the cervix through the abdominal walls, and effecting a wider divergence of the encircling cervical border on all sides; a space about two inches in diameter.

The pressure was continued in both directions this time for one hour and five minutes, when physical exhaustion, both on my part and that of the patient, warned me to desist. The parts were secured against further protrusion by Barnes' dilater in the vagina, and a respite of a few hours given to repair damages.

At 10 P. M. the operation was resumed. The tampon had afforded an excellent support to the protruding fundus. From time to time I adopted a suggestion of Prof. Thomas', which, in Dr. Emmet's case, had seemed advantageous, of drawing down the uterus as far as possible and then carrying it suddenly upwards to pass it through the os and cervix, but unsuccessfully. In adopting again, further, the suggestion of Dr. Noeggerath, to crowd the thumb into one cornu, it passed through into the Fallopian tube, a circumstance which occasioned me no little alarm as to future consequences; considerable hemorrhage followed, and I desisted for the present. At this time the os was so far dilated that I could pass two fingers of the right hand downwards from behind the pubis, and through it, until they met the thumb of the left hand carrying up the cornu from below.

9th. No serious consequences have followed the violent pressure of the preceding night. Pulse quiet and patient comparatively comfortable; hop poultices to abdomen, and cold water injections. Subsequent applications of the sol. nit. argenti again kindly healed the breaches made, and after a few days she returned home to await the passing over of her menstrual period, and the recruiting of her energies for a further struggle. In order to avoid prolixity I shall pass over the details of the repetition of the several manipulations for reduction upon her return, made upon the 28th and 29th of November, and the 8th and 9th of January, 1867.

Jan. 11, 1867. Patient was placed in the usual position, and under full anæsthetic influence, the usual manipulations were again resorted to. With the assistance of Prof. Thomas and Dr. Jas. L. Little, who, on this occasion, administered the chloroform, a pressure from below upwards of about twenty pounds was maintained per vaginam, and a corresponding counter-pressure from above downwards through the abdominal cavity upon the encircling edges of the cervix. The handle of an egg beater was also resorted to occasionally to relieve the weary and aching forefinger. We took alternate periods of making the pressure, relieving each other at intervals of forty-five minutes; and thus we combined and continued our efforts for *three hours*, until the resistance of both cervix and uterus was overcome, and our fatigue and anxiety were abundantly rewarded with a triumphant success. This fell to the lot of my friend, Prof. Thomas, who, just as the period of his forty-five minutes had about expired, being the end of the fourth alternation, was fortunate enough to complete or effect the reduction with the points of the fingers to the great satisfaction of all parties concerned.

The case, for the length of duration and obstinacy of the inversion, and the severity of the effort needed for its reduction, is, perhaps, without a parallel in obstetrical history.

Its sequel is briefly told. The operation had lasted within a few minutes of three hours, and naturally had much exhausted the patient. Cotton saturated with glycerine was introduced into the vagina, and muriate of morphia, gr. ss, given.

Jan. 12. In good condition; pulse quiet; a little inclined to nausea; abdominal walls and uterus tender; hop poultices to abdomen.

14*th*. Tenderness much diminished.

15*th*. Applied solid nitrate of silver with Lallemand's porte-caustique; also at other times solution of nitrate of silver within the cervical canal.

16*th*. Tenderness nearly gone. Retroversion, which had existed for a few days past, is removed, and position of the uterus now normal. The patient, desirous of returning home, left on the 20th (tenth day after the operation) for Newburgh, travelling without inconvenience in the horizontal posture, and well satisfied with the result of her visit to New York.

The points in connection with this interesting case upon which I desire to dwell most strongly, are: 1st, the necessity of long, steady, and continued perseverance upon the part of the operator *to fatigue the encircling cervix*, and cause its relaxation from around the protruding uterus, which is similarly effected and very much aided by, 2d, the counter-pressure from above downwards through the abdominal walls, with the points of the fingers of the right hand kneading and compressing it, and, perhaps, dilating it mechanically.

Except by this combination of forces, carried to the uttermost extent of fatigue on the part of the operator and patient which nature is capable of enduring, success is not, I think, in cases of long standing to be attained. But with it much may be expected. It is not original, but it is novel, and merits a faithful trial in all cases.

I will only further observe that, whereas this young wife came here to submit to a dangerous operation, which, even if successful, would have forever disqualified her for child-bearing, she returned to her home with a perfectly normal condition of her sexual organs, a healthy uterus, and complete aptitude for conception.

120 Ninth Street.

Art. XII.—*Case of Congenital Malformation and Deficiency of the Upper Extremities.* By J. H. Pooley, M.D., of Yonkers, N. Y.

Grace S. attracted my attention at first by the absence of the thumb both on the right and left hand, and on further examination I found other peculiarities worthy of attention, and which I am about to describe.

The child is 10 years of age, rather pretty, with dark hair and eyes, tall, and, with the exceptions to be mentioned, well developed.

The right arm presents no peculiarity above the elbow, but below that joint seems rather short, and presents a slightly curved appearance, the concavity of the curve looking inwards, or to the radial aspect of the forearm. The forearm measures from the olecranon to the styloid process of the ulna 5½ inches; its motions are all circumscribed and imperfect, from what cause, however, does not clearly appear. The muscles on its dorsal aspect, to wit, the extensors of the hand, seem to be deficient in power and development, the result of which is a form of partial paralysis, presenting great similarity to the wrist-drop of lead palsy. The hand has four taper, well-formed fingers, but no thumb or metacarpal bone corresponding thereto; there is a slight contraction of the forefinger.

The left upper extremity is curiously deformed throughout, presenting rather the appearance at first sight of the flipper of a seal or turtle, than of that perfection of grace and mechanical adaptation, the human arm. The following is a detailed description of its peculiarities:—

The scapula is smaller than its fellow of the opposite side, narrower, and more sharply triangular in form. At the humeral extremity it has only one process, which seems to be an exaggerated coracoid, and projects very strongly, giving the shoulder a strangely pointed appearance. This want of the usual rounded contour of the shoulder is still further increased from the fact that the head of the humerus is small, and almost imperceptible either to the sight or touch.

The humerus is short and slightly curved; it measures from the top of the coracoid process to the olecranon 6½ inches.

The left forearm has no radius, the ulna is short, only 4½ inches long, and strongly curved; there are only one or two imperfect carpal bones, those on the radial side being all wanting, and owing to this unsupported condition of the hand, it is strongly adducted. This hand, like the other, wants the thumb and its metacarpal bone. The fore and middle fingers are contracted, the forefinger overriding its neighbour.

This child's ears are remarkably small, and differ considerably from the usual conformation; she is also quite hard of hearing. She has well-marked phthisis, and has recently had an attack of hæmoptysis; her mother is also consumptive, and not expected to live long.

This child's mother, I was told by her grandmother, whom she was visiting at the time of my seeing her, presents a similar deformity, except that in her case there is on the radial side of each hand a little teat-like process or appendage, probably rudimentary thumbs. This deformity in the mother the grandmother refers to a fright she received while pregnant, from some crabs crawling about the kitchen floor, and thinks she is justified in this piece of philosophy, because she says her daughter's hands look like crab's claws. Grace had a little sister, who only lived a few months, and was similarly deformed. The other children, two in number, presented no deformity of any kind; they died in infancy. The deformity in the case of Grace and her sister is also attributed to a fright their mother received while pregnant, but in them there is no attempt to trace any analogy between the object producing it and the resulting deformity; but the grandmother says that in both cases the mother confidently predicted at the time of the fright, and afterwards, that the children would be marked.

I have thought this case extraordinary and interesting enough to deserve a permanent record within reach of any fûture compiler, who may go over the ground which Annandale has recently, but very imperfectly, occupied, or any philosopher who may be glad of one additional instance by which to support or illustrate a theory.

I have abstained from adding any comment or remark to the simple record, and will close by simply suggesting as queries not yet definitely answered, What degree of credit, if any, is to be given to the influence of violent or disagreeable impressions on the pregnant woman in producing these deformities? and what influence, if any, has the tuberculous or strumous diathesis in producing them?

TRANSACTIONS OF SOCIETIES.

ART. XIII.—*Summary of the Proceedings of the Pathological Society of Philadelphia.*

1867. *March* 13. *Fibrous Tumour of Uterus.*—Dr. HUTCHINSON, in presenting the specimen, said that he was indebted to Dr. James V. Ingham for notes of the case from which the specimen was derived.

Ann M., aged 54, single, tailoress, was admitted into the Episcopal Hospital on the 26th of Nov. 1866, suffering with great enlargement of the abdomen, which seriously interfered with both the functions of respiration and digestion (difficulty of breathing and constipation). Her complexion was generally of a dark red hue, but would often become bluish, at which times respiration was extremely difficult. Physical examination revealed the presence of a large tumour in the abdomen, extending into the epigastric, and occupying all of the hypogastric and umbilical regions, and merging into both right and left lumbar and iliac. There was also an enlargement of both thyroids and the isthmus. During her residence in the hospital she had periodical discharges per vaginam which were hemorrhagic, often losing in this way more than a pint of blood. They were either menstrual or else an evidence of the "*vis medicatrix naturæ*," intended to relieve the intense congestion from which all the organs suffered, and merely obeyed the natural female law of periodicity.

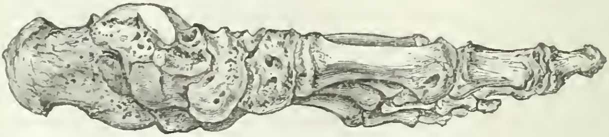
The last of these hemorrhages occurred on Monday, March 4, 1867, fourteen weeks after her admission, and three weeks after her previous one. On Wednesday she complained of great dyspnœa; she suffered greatly from it during the day. Her face was cyanosed, and her body and limbs were of a dark-reddish hue. She had lost about a pint of blood during the three days since her attack. When seen on the morning of the 6th (Wednesday), her extremities were warm, but no pulsation could be detected in the temporal, radial, or tibial arteries. In the evening, about seven o'clock, she became unconscious, and at half-past eight died.

The *autopsy* was made sixteen hours after death, when the following conditions were ascertained: The lungs were much congested, but were permeable throughout; the heart was small, with no lesion except a slight deposit upon the free border of both of the auriculo-ventricular valves. The stomach and intestines were distended with flatus; the liver was greatly congested, but there was no appreciable alteration in its size. The spleen was much enlarged, and upon the upper surface the capsule was thickened, and of a white fibrous character; it was one-sixteenth of an inch in thickness. The kidneys were congested and small. On extending the incision down the abdomen, the tumour was exposed to view; it occupied the whole anterior part of the abdomen, pressing upon the stomach, and distending the lateral walls of the abdomen. The intestines were forced upwards and backwards. The tumour rested upon the vertebral column, and pressed upon the vena cava and aorta, thus impeding the circulation in the lower part of the body. On raising it out of position it was found to be free down to where it was connected to the rectum and surrounding tissue by the peritoneum. The lateral veins supplying it were enlarged to the calibre of nearly one inch. Cutting through the vagina the tumour was found and taken out; it weighed seventeen pounds, and measured twenty-seven inches in circumference at its widest part, and was ten inches in length. The ovaries were posterior to the mass of the tumour; the right one was congested, and contained a large blood-clot; the left one was atrophied, and had attached to it a large cyst, containing a milky-white fluid, which was unfortunately lost, and so was not examined microscopically. On examining the tumour at its vaginal extremity, an opening, which proved to be the os uteri, was seen. It was about half an inch in diameter, and with extremely thin walls; the cervix was totally obliterated. Extending the incision upwards, the immediate exterior of the tumour was exposed; it was slightly adherent to the much-distended and very thin wall of the uterus, connected to it by soft and friable bands of fibrin. The uterus was readily separated from the tumour up to its fundus, where it was firmly adherent posteriorly. Cutting it open, a firm, grayish, and apparently fibrous structure appeared to constitute the entire mass, with the exception of a small portion of its interior, which was filled with a yellowish white substance of not quite so dense a nature.

Dr. William Pepper, who had made a microscopic examination of the tumour, said that it was fibro-nuclear in its character. The yellowish-white substance was found to have undergone fatty degeneration.

March 27. *On the Structural Changes in a Specimen of Flat-Foot.*—Dr. HARRISON ALLEN made the following remarks:—

The bones of the left foot, removed from a negro subject from the dissecting-rooms of the University of Pennsylvania, were found to possess the following peculiarities: The dorsum of the foot was but slightly arched, the surface of the cuboid being actually below the level of the cuneiforms. The astragalus, viewed relatively to other portions of the tarsus, was elevated; but its position in comparison with the same bone of a normal foot, was somewhat depressed. The plantar surface was characterized by an unusual prominence of the region giving origin to the calcaneo-scaphoid ligament, of the inferior surfaces of the astragalus, scaphoid, and internal cuneiform bones. The inner border was straight to a point opposite the posterior border of the internal cuneiform, but beyond this it was thrown in a conspicuous prominence formed conjointly by the scaphoid bone and head of astragalus. (See figure, in which it may be remarked that the first metatarsus and first phalanx of the great toe are represented as disproportionately large.)



The apparent cause of the deformity was in the head and neck of the astragalus. The head was pushed downwards, and the neck was almost obliterated—the latter measuring but four millimetres upon its inner edge. The lower half of the articular surface, with the scaphoid line, was exposed upon the plantar aspect, and separated from the upper half by a shallow groove. The latter portion was articulated with the lower half of the scaphoid bone, while the remainder had formed a new, irregular opposing surface to the scaphoid at the expense of the inner portion of the head and neck of the astragalus. The contour of the scaphoid bone was altered at the points of contact with the abnormal surface above mentioned, while its facets for the cuneiform bones were unusually well defined. The internal cuneiform, with the exception of the inner surface, being more concave than usual, was not changed. The calcaneum was somewhat inflated upon its inner surface, and irregularly grooved upon its outer, where, at its articulation with the cuboid, two minute exostosed points were seen. The inferior extremities of both tibia and fibula were hypertrophied, and showed evidences of periosteal excitation. This was especially conspicuous upon the external malleolus, and extended thence along the borders of the interosseous space. The right foot was normal.

Extensive Encephaloid Cancer of the Subserous Tissues of the Peritoneum and Pleura. Intensely Bronze-coloured Skin. Supra-renal Capsules healthy.—Dr. MITCHELL exhibited the specimens, and gave the following history of the case from which they were derived.

Mrs. B., æt. 62 years, after many years of fair health, untroubled except by habitual constipation, began to suffer about eighteen months ago with an increasing difficulty in her lower bowel. At the same time she had so much nausea as to induce the belief that she had an organic disease of the stomach, while her tint, her emaciation, and the presence of a tumour in the left iliac fossa, led her attendants to suppose that both sets of symptoms were alike due to cancer. Up to Oct. 23, 1866, when I first saw her, she continued to have great constipation; occasional vomiting and more constant nausea; at times pain low down in the back, but none elsewhere; with a good deal of insomnia.

At this above date Mrs. B. was thin, sallow, and much exhausted by a long journey from the North. After a number of ineffectual efforts I succeeded in getting her bowels somewhat regular by giving aloes, three times a day, in doses of two or three grains. The nausea was relieved and hereafter kept in check by a succession of small blisters over the pit of the stomach, at the same time she received a generous diet, and more or less wine or brandy.

After a temporary rally, she began to decline anew, about December 1, 1866, and thenceforward experienced an increasing amount of constipation and pain in the back, with now and then attacks of flatulent colic relieved by the escape of wind.

About Oct. 1, soon after her arrival here, I made several attempts to ascertain the condition and size of the tumour said to exist in the left iliac fossa, but failed to satisfy myself on account of the large amount of gas in the intestines. When at length I succeeded, I found that I could detect in the left iliac fossa a rounded mass which I could almost seize from above when I pressed the perineum and rectum upwards with my left hand. The forefinger encountered no resistance in the rectum, as far as I could touch with it, but a rectum bougie failed to pass up the gut further than just beyond where the finger could reach, while also I found that not more than four ounces of water could be thrown into the gut, unless an unusual length of time was employed. The feces were small and round, and hard, not flat. A sound entered the bladder easily and could be freely moved therein, while the water was retained, at least two or three hours. Even up to the last she could hold it half an hour or more. The womb appeared to be healthy to the touch. A womb sound could be readily passed into the uterine cavity. No other tumour was anywhere detected, and the thoracic viscera were also healthy.

The mass described continued to grow, and as the constipation increased it became impossible to tell what was fecal accumulation and what was new growth of diseased tissue. At the same time fluid began to collect in the peritoneum, and this also added to the difficulty of defining the disease. During three weeks before death, Mrs. B. passed in all but three small scybalæ. Despite this absolute stoppage of the intestine she had no vomiting, and needed no blisters during the last month of her life. The water also continued to pass in fair amount, a pint to a pint and a half daily, illustrating Dr. William Brinton's remark upon the relation between amount of urine and the site of the intestinal obstruction.

The pain in the small of the back became a prominent sign during the last forty days, and to it was superadded first, pain in the left crural nerve distribution, and finally in that of the right side, marking, I suppose, the intrusion of the tumour into the right iliac fossa. The sacral and lumbar pain was always eased by frictions, and by internal use of meconate of morphia. Only once was a subcutaneous injection needed to allay the distress. The crural pains were more rare, and usually came on about noon, but the whole left leg was oftentimes so hyperæsthetic that the touch of the clothing became painful. During the last two weeks the urine was feebly albuminous, with pale granular tube casts.

The state of the skin offered a most interesting study. Early in November I first noticed that the scar left by the blister was unusually dark. Within two weeks I began to see a change of tint in the skin, which, previously sallow, now became of a leathern colour. This hue increased in depth as she advanced in her disease until the face, hands, arms, and bosom exhibited a tint as dark as that of old leather. The bronzing, as I suppose it should be termed, was most intense on the face and where the blisters had been, and was a general colouration varied by large islets of deeper tint. Towards the feet it faded to a white clear skin. On the hands it occupied curiously the depths of all the lines of wrinkle on the palm, so that it looked as though these members had been dipped in muddy water, and hastily dried, leaving lines of yellow in the creases. The nails were some of them marked at their outer ends, just below the quick, by a band of pigment. During her whole illness Mrs. B. also suffered with a slight eczematous affection, the scars of which were notably stained of a deeper tint than the skin about them.

With increasing pain in the back, and a good deal of dyspnœa, and sense of uneasiness in the abdomen and with great emaciation, the approach of death was preceded about two weeks by a rapid and singular diminution of the amount of pigment in the skin; I think that it lessened one half. Mrs. B. became insensible early on Feb. 27, and died at three o'clock A. M., Feb. 28.

I had diagnosed her case as cancer pressing upon, and probably involving the rectum.

I presumed that we should also discover disease of the supra-renal capsules. I did not suppose that there was any cancer of the stomach.

Cadaveric section, by Drs. Keen and W. Pepper, present Dr. Packard, thirteen hours after death. Excessive emaciation. The colour in the skin is irregularly distributed, least on the feet, most on the anterior fold of left axilla. Marked at same site on right side, less on arms, and least on dorsal aspect of humerus. The abdominal surface rough, and covered with bran-like scales, and uniformly tinted, except where the five blisters marks present an intense colouration. The face was lighter tinted than the chest, but had no patches such as were seen over the right, greater trochanter of femur, left gluteal region, and neck. The external genital parts were deeply bronzed in hue. Abdomen rounded and fluctuating. Through the anterior walls could be felt rows of rounded bodies, presumed to be hard feces, and proved finally to be these, and also cancerous masses, but undistinguishable from one another when felt from the outside.

About one quart of yellow serum in peritoneum; absolutely no lymph or adhesions above the pelvic brim. The pelvis was filled with a cancerous mass, which inclosed the left ovary, but respected totally the womb and right ovary with its appendages; neither did it involve the thickness of the bladder walls, nor those of the great intestine, which it strongly compressed. The interior linings of the two latter viscera were simply congested, but not ulcerated, hence absence of the usual discharges which accompany many rectal cancers. On the left, between the uterus and sacrum, was a sac some four inches wide full of serum; two like cavities were found, one higher up and one on the right side of the mass. Above the pelvic brim we found numerous round cancers, lying on the folds of the mesentery; two large ones, two inches in diameter, in the meso-colon, and others of equal size in the great omentum and gastro-splenic omentum. At the angle of the diaphragm and right lobe of liver was a tumour four inches across. Stomach healthy. Small cancers lay around the gall-bladder, but did not enter the surface of the liver. Gall-bladder full of gall-stones, and atrophied so as to be altogether out of use; common duct and hepatic duct pervious.

Kidneys.—Right, normal; on its peritoneal face there was a firm white mass of cancer, ½ inch diameter. Left kidney and pancreas normal.

Lungs.—Slight adhesions at both apices, about a pint of serum in the two pleuræ, most in left; at right apex was a mass of induration, which was probably altered lung, and was dotted with cretaceous particles. In the furrow between the upper and lower lobes, 1½ inch from posterior border, we found a cancerous body ¾ inch in breadth, and lying immediately beneath the pleura. Several smaller masses of like nature were found at other points below the pleura. Throughout the upper lobe were also numerous shot-like calcareous masses. Lung tissues otherwise normal; bronchial glands unaffected. Left apex had like hardening, but less than on right, and contained no calcareous masses. Lung otherwise healthy.

Heart.—Incipient atheroma of aorta; slight thickening of right and left auriculo-ventricular valves.

The supra-renal capsules were healthy except a little fatty alteration, such as is commonly found after middle life.

I append the microscopic examination which Dr. Wm. Pepper was so kind as to make.

Microscopic examination. By Dr. WM. PEPPER.—*Skin* normal in all respects save its coloration; which depended partly upon a general staining of the whole tissue, partly upon a deposit of dark granules in angular lines, apparently following the ridges of the skin. *Lungs.*—The indurated tissue at right apex, surrounding the little calcareous nodule, presented appearances of condensed lung structure, the air-vesicles being entirely obliterated; no distinctive appearances, however, of either cancer or tubercle.

The various cancerous nodules—those in pleural cavity, those in the omenta of the abdomen, and those attached to the surface of the spleen and liver, as well as various parts of the large mass involving the left ovary—uniformly presented a most varied and complete demonstration of cancerous elements. There was an almost entire absence of any true fibrous stroma, the cells appearing packed in close apposition. These cells were of the most varied size, and contained from one to four nucleolated nuclei. But few true mother-cells were seen.

The supra-renal capsules presented no evidences of cancerous degeneration, the grayish matter in their cavity being merely a collection of small fat globules, with granular debris and some small imperfect cells, apparently the result of fatty degeneration of the contents of the gland, with a portion of its glandular lining.

The costal cartilages did not appear of an unusual colour; they were, however, undergoing ossification, and the intercellular matrix was much more dark, granular, and striated than it is normally seen to be.

April 25. *Small Intestinal Concretion in the Appendix Vermiformis Cæci; Ulceration and probable Perforation of the Appendix; General Peritonitis; Death after five days' duration of the Acute Symptoms.*—Dr. Wm. PEPPER related the following case:—

W. W., æt. 29, of very robust health, by occupation a farmer, living in a healthy district in Pennsylvania, was first confined to his bed Wednesday, May 21, 1866. He had not, however, been feeling well for a few days previously, but as his symptoms were merely general and vague uneasiness and some languor, he hardly alluded to them, and continued to work in the fields until Tuesday noon. On Wednesday, he suffered with colicky pains in the abdomen, and nausea, for which he took a dose of calomel, followed by castor oil. This dose produced one or more free stools. On Thursday the colic and nausea were increased, but no vomiting occurred. The pain in the abdomen was violent, spasmodic, but not referred to any particular point. There was some meteorism of the abdomen, but little tenderness. The tongue was heavily furred, the eyes cholæmic, and the urine tinged with bile pigment. He took laxative medicine, which brought away some fluid fecal matter, without blood or inflammatory product. Carminatives and counter-irritants were also employed. On Friday, symptoms of collapse began to appear, and there was more positive evidence of peritonitis. On Saturday, the nausea continued, but still without vomiting. Bowels rather costive; belly tympanitic, with tenderness, most marked in the right iliac fossa; countenance anxious, and more marked collapse. The treatment consisted in free stimulation and the use of opium in large doses. On Sunday, he sank rapidly; the face became pinched, the abdomen still distended, but less painful; nausea, but no vomiting; the pulse was rapid and thready. Death occurred at noon, five days from the development of acute symptoms.

Post-mortem examination was made sixty hours after death, the body having been well preserved in ice. The thorax and abdomen were alone examined. The lungs and heart were perfectly healthy. The ensiform cartilage was bifid. The liver was congested, but healthy; the gall-bladder distended with bile, but contained no gall-stones. The duodenum and structures adjacent to the gall-bladder were deeply stained with bile. The stomach was healthy, as were also the spleen, pancreas, and kidneys. Upon opening the abdominal cavity, the great omentum was found drawn down over the intestines, so as to conceal them from view, and adherent to the anterior walls of the pelvis. It was thickened and opaque. In the right iliac fossa, the lower edge of the omentum was doubled upon itself, and so agglutinated as to form a nodule about an inch and a half long, and two-thirds of an inch in diameter. Upon loosening this from its attachments, it was found to inclose the vermiform appendix for about half its extent. This part of the omentum, besides being agglutinated, was deeply ecchymosed. The convolutions of the small intestines were in many places adherent by soft bands, and small collections of pus were found between the folds. The peritoneum throughout was much injected, and in places had an appearance of excoriation, though these conditions were much more marked towards the right iliac fossa. The adhesions of the large intestine to the iliac fossa were preternaturally strong, and the ascending colon was the seat of intense peritonitis. Under the cæcum, in the right iliac fossa, was a considerable collection of offensive grumous matter. The peritonitis did not extend to the higher part of the small intestine or to the transverse colon, but involved all the intestines in the lower part of the abdomen, and the sigmoid flexure and rectum. The pelvic cavity contained several ounces of pus. The mesenteric glands, opposite the ileo-cæcal valve, were enlarged and florid. The vermiform appendix was evidently distended, much discoloured by intense congestion, and, at two places, was tightly adherent to a loop of ileum, just at the point where it entered the cap of thickened omentum above mentioned.

On separating these attachments, the opposed surfaces each presented an ovoid layer of grayish lymph. This lymph could be peeled from the ileum, leaving its peritoneum intact. Upon opening the vermiform appendix, a body, of the size of a small pea, was found towards its free extremity. Its cavity did not communicate freely with the cæcum, on account of adhesions of its mucous surfaces together. The true cavity of the appendix contained some grumous pus, and showed several deep ulcers in its walls. The largest of these, about half an inch in diameter, correspond to the layer of lymph upon its peritoneal surface, by which it adhered to the ileum, and extended through all the coats of the appendix, excepting possibly the peritoneal. It seemed probable, however, that a complete perforation had here taken place, with slight escape of the contents of the appendix, and that then adhesion by inflammatory exudation had ensued with the fold of ileum. The inflamed omentum forming a cap for the end of the appendix had also served as a support and protection. The peritonitis had evidently spread from this point, and the symptoms accord well with this mode of development; the ill-defined symptoms of the early days corresponding to the period of disease in the appendix alone, and then the graver and rapidly fatal symptoms indicating the spread of the inflammation. The body in the appendix, when dried, proved to be a small intestinal concretion, light-coloured, friable, incrusted with mucus, but containing no mineral matter. The intestines themselves were distended, contained some semi-fluid, highly coloured feces; the mucous membrane was healthy, even at the opening of the appendix.

Rupture of the Bladder.—Dr. JAMES V. INGHAM read the following case:—

Daniel P., male; Ireland; age 34; married; clerk; came to the Episcopal Hospital on April 10, 1867, for admission. When first seen by me he was sitting in a chair, with his body thrown forwards, and his knees slightly raised; face pinched and anxious. He stated that, sixteen hours before, he was playing with a friend, and was thrown down and jumped upon. Immediately succeeding the jump, he felt a sharp pain shoot across his abdomen, and, as he expressed it, run up to his heart, almost choking him. A short time afterwards he passed a large quantity of blood from his bladder, which gave him great pain in passing. Two or three times subsequently, and previous to his application for admission, he again passed blood. When admitted he was in great pain, which was increased by the slightest motion, and which produced the choking sensation before noticed. His abdomen was moderately distended, and extremely sensitive upon pressure. About one inch below the umbilicus, and a little to the left, there were three or four abrasions in a crescentic form, which were apparently caused by the nails of a boot-heel, the concavity of which looked outwards and downwards. Upon the loins there were also some slight bruises. As he complained of a great desire to pass water, and was unable to do so, the catheter was passed, and about eight ounces of urine, much discoloured with blood, was drawn off. This gave him temporary relief, but its repetition was necessary about every three hours during the night; the character of the fluid changing in no respect. A few hours after his admission he was seized with violent retching, for the first time, which was obstinately persistent, excited by everything swallowed, and by every motion of the body. It lasted until his death, almost without abatement.

On the morning of the 11th there was no change, except that he complained of great thirst, every attempt to satisfy which brought on the retching, until he was given carbonated soda-water to drink, which allayed both for a short time. All stimulus and nourishments had to be given per rectum, and in quantities not exceeding f℥j, or they could not be retained. During the day he passed his bloody urine voluntarily, and appeared to be much easier; the retching, however, still continuing until late in the afternoon, when he had a return of the paroxysm of acute pain, accompanied with the same choking sensation. Morphia was administered hypodermically, after which his pain left; nor did it return during his life. The morning of the 12th found him sinking, partially delirious and extremely restless, with the evidence of death in the injured parts. He lingered in this condition until the next morning, April 13, when he died in a fit of mania. He had been a hard-drinking man, and was partially intoxicated when admitted.

Eight hours after death his body was examined with the following results: Abdomen distended; no discoloration of the skin except where bruised. The intestines were firmly glued together throughout their entire length, and were in some places very much congested, especially in those parts which corresponded in position to the external bruise. The cavity of the abdomen contained a large quantity of bloody fluid of a highly urinous smell, and the bladder was found to be ruptured through its peritoneal coat posteriorly, and extending across its body. The bladder and a portion of the bowels were much darkened, and were evidently undergoing putrefactive change. There were no other lesions, except a few clots of blood found just below the liver, and which were supposed to come from a ruptured vessel, but of which no trace was found.

Dr. W. S. FORBES remarked that the case just reported by Dr. Ingham, the Resident of the surgical wards of the Episcopal Hospital, came into the house during my term of service. It suggested several points of interest. It is manifest that in cases of rupture of the bladder, occasioned either by direct violence applied to the abdominal wall, or by general concussion of the whole frame, or by spontaneous rupture so called—that is, rupture from over-distension, when some mechanical impediment prevents the evacuation of the urine—the laceration of the organ takes place at that point where the viscus is least supported. (I speak now of rupture or laceration as an individual injury, not associated with and not accompanied by other complications, such as fracture of the bones of the true pelvic basin, or gunshot and other wounds.)

I confess to the belief that in such cases of laceration the viscus will be found to have been distended with urine at the time of the accident to a greater or less degree, as in the case just reported. Let us take the cases of spontaneous rupture, or laceration by distension. Resting on the dense fascia, connective, and muscular tissue of the pelvic floor, supported behind, on either side, and to a lesser extent of surface in front by the bony walls of the true pelvic basin, the distended and enlarging viscus has the superior portion of its body taken upwards and forwards by the increasing urine; it rises above the margin of the superior pelvic strait, thus indicating that in this direction resistance is less than on its floor or its sides. The violence continuing from within by the increasing urine unable to escape below by the urethra or otherwise, will cause the bladder to elevate the weight of the intestinal mass in the abdomen, and at the point where this weight or pressure is least the bladder will become most distended, until its already thinned walls yield—its muscular tunic first, the mucous second, its areolar third, and its peritoneal last; or it may be that its peritoneal tunic will be dissected up from its attachment and not ruptured at all, or at some point distant from the opening in the neighbouring tunics. And it is impossible to say, on account of the varied movements which the intestines enjoy, where the point of pressure is greatest; and therefore the exact seat of rupture on the upper part of the bladder cannot be indicated in these cases. It may be just by the margin of the lumbar vertebræ, or near the abdominal walls in front or on either side; suffice it to say it is at that spot where resistance is least, and at which the bladder is most distended, and not at that point where support or pressure is unyielding.

In cases of rupture from concussion of the frame, as where the patient has fallen from a height, the bladder is invariably found to have been more or less distended. The viscera of the abdomen, owing to their pendulous position, coming violently in contact with the upper surface of the bladder, its wall will be lacerated by the pressing intestine, causing the urine to rise by its side to such a degree as to make the vesical tunics give way at the most elevated point of distension; or it may be that the tunics will be torn by being drawn over the upper surface of the urine in the bladder at the moment of contact with the earth.

In cases where direct violence is the cause of rupture, the offending body pressing on the bladder, more or less filled with urine, causes the urine to distend the wall of the bladder at the least resisting point to such a degree that laceration takes place. This may be, and generally is, by the side of the offending matter, but not immediately under it; the urine is the agent which lacerates the tunics. In the case before us the man was kicked on the abdomen, and the rupture is on the *superior posterior* aspect of the bladder, just *above* and to the right of the promontory of the sacrum.

In little boys and growing children, there being but little urine in the bladder at any time, owing to the frequency of micturation, and to the fact that the bladder is more nearly in the abdomen—especially when it contains a little more urine than ordinary, and consequently less firmly supported by the pelvic surroundings than in the adult—its rupture from direct violence and from concussion is comparatively very rare. The movement of the entire viscus, when violence is applied, lessens its liability to rupture at any one point more than another.

M. Houël[1] has stated in his collection of thirty-seven cases of rupture of the bladder by external violence, that twelve were on the anterior aspect, and without laceration of the peritoneum; that fifteen were on the posterior aspect, and nearly all communicated with the peritoneal cavity; three were lateral, two without and one with peritoneal rupture. In two cases the seat of rupture is not stated, but communicated with the peritoneal cavity; three were double. It would appear, therefore, that rupture in such cases takes place nearly as frequent on the anterior as the posterior aspect—but not on the surface, supported by the pelvic basin—in other words, the laceration occurs on the *yielding* surface; and, I believe, where on this yielding surface will depend on the least resisting part.

M. Houël has collected seven cases of spontaneous rupture, so called; six of these were at the posterior, and one at the superior part of the bladder. He speaks of them all as being half peritoneal, the muscular and mucous coats only being ruptured.[2]

The fact that the bladder is distended to a certain degree when ruptured, thus allowing a highly irritating fluid, the urine, to escape directly into the peritoneal cavity, or immediately beneath the membrane, adds greatly to the cause of a fatal issue in the event. The patient feels that something hot is going all over the abdominal viscera. The shock is great and somewhat continued. The reaction is rapid when once set in, and continues severe. The termination is usually fatal from peritonitis, which is generally extensive, though the bladder itself is not inflamed correspondingly.

The cause of the peritonitis is the escape of urine through ruptured walls of the bladder into the peritoneal cavity, or immediately beneath the membrane; and it appears to me to remove that which has already escaped, and to prevent any future extravasation are the points to which the surgeon should direct his attention. In cases of gunshot wounds of the bladder, where the recovery is more frequent than in the cases of rupture now under discussion, I believe the comparative success is owing to free vent being given to the urine. I think, therefore, that to make an incision into the bladder, as in the lateral operation for stone, would be proper in certain cases, and had I seen this patient soon after his accident I should have submitted to him the propriety of doing so. The fact that bloody urine, in considerable quantity, was taken from him by means of the catheter, that it would then stop flowing, and, in certain positions of his body, would run again; that the man had the sensation of something hot being poured over his abdominal viscera; his prostration, and the history of his accident, all indicated the nature of the lesion. To have given the urine, both that which was in his bladder and that in his abdominal cavity, and that constantly secreted, a free vent, seems to me eminently proper.

---

[1] Houël, Des Plaies et des Rupture de la Vessie, Thèse de Concour. 1857.

[2] See Nélaton, Elem. de Pathol. Chirurg., 1858.

Mr. Syme, in the *Lancet* of 1848, p. 289, relates a case in which a boy, attempting to leap over a railing, fell forward, and violently struck his abdomen against a post. With the catheter four ounces of bloody urine were drawn off. There was great collapse. Leeches, fomentations, and an opiate were prescribed. For two days the distension of the abdomen increased, and the catheter continued to draw off bloody urine. On the third day an obscure fluctuation below the umbilicus was observed, and Mr. Syme made an incision into the linea alba; the fluid which flowed out was distinctly urinous. Two days afterwards the incision was enlarged, and a slough of cellular tissue escaped, and Mr. Syme felt the opening into the bladder. This patient entirely recovered.

Mr. Chaldicott likewise related a case in which a man, fifty years of age, ruptured his bladder by running against a post. No urine would flow at first, but eighteen hours after the accident Mr. C. drew off, with the catheter, an ounce of bloody urine. Peritonitis set in, and was treated with opiates, leeches, and fomentations. Six days after the accident, and while improving, he made an effort to pass his water himself without the use of the catheter, and something gave way, and he had the symptoms of rupture of the bladder afresh. He was again put under the same treatment, and ultimately recovered. (See *Lancet*, Oct. 1846.)

Rupture of Heart.—Dr. Packard presented the specimen for Dr. THOS. J. YARROW, and then read the following:—

F. M. L., aged 34 years, having suffered for several months with occasional attacks of dyspnœa, became alarmed at their increasing frequency, and summoned me to see him Feb. 7, 1867. In addition to these attacks he complained of a slight cough, and feeling of constriction across the upper portion of his chest, with moderate expectoration of glairy mucus. Complexion, pale; pulse rather weak, but regular; tongue clean, and bowels regular. He stated that he had lost flesh. (Had been treated for phthisis.) Had long been habituated to the immoderate use of whiskey.

I examined his chest carefully, but was unable to detect the slightest evidence of cardiac trouble, other than the somewhat enfeebled action of the heart corresponding with his debility. His respiration was entirely normal, when I saw him. He spoke of having experienced sensations as if something were "tearing" within his chest, at times. Was not subject to palpitation of the heart. Prescribed general tonics and the following mixture: Potass iodidi ʒij; tinct. lobeliæ f℥ss; syr. aurantii f℥ij; aq. font. f℥ijss.—M. Sig.—A teaspoonful every four hours. I had intended to see him again, but received a message to the effect that he was completely relieved, and, therefore, did not repeat my visit. April 9th (about two months subsequently), I was called to visit him, in great haste. Not receiving the message until 2 P. M. (it having been sent at 11 A. M.), I did not reach Mr. L. until three hours had elapsed, and found that he had expired. His sister stated that he was preparing to go out for a walk, and, whilst endeavouring to get his foot into a tightly-fitting boot, he suddenly fell from his seat, gasping and struggling violently for breath, his face becoming livid. He remained in this condition, gradually growing weaker, for two hours, when death ensued.

Post-mortem forty hours after death (was unable to procure it sooner).—Cadaver well preserved. Upon opening the chest the pericardium was observed to be greatly distended by firmly coagulated-blood, which had issued from the heart through a small rupture of the left ventricle near the apex. The heart was greatly softened throughout its entire structure, and especially at point of rupture. Valves healthy. Aorta normal, with no atheromatous deposits. Lungs perfectly normal.

REVIEWS.

ART. XIV.—*Military Surgery.*

1. *Handbuch der Kriegschirurgie.* VON. J. NEUDÖRFER, M. D., Docent der Allgemeinen und Klinischen Chirurgie an der Universität in Prag, K. K. Regimentsarzt, etc., 8vo. Erste Hälfte, Allgemeiner Theil, pp. 441. Zweitze Hälfte, Specieller Theil, Kapitel I., Verletzungen des Kopfes, pp. 132. Leipzig: Vogel. 1864–1867.

A Manual of Military Surgery. By J. NEUDÖRFER, M. D., Professor of General and Clinical Surgery in the University of Prague, Regimental Surgeon of the Royal Austrian Army, etc. Vol. I. General Division. Vol. II. Special Division. Chapter 1. Injuries of the Head.

2. *Annual Report* of Dr. P. J. HORWITZ, Chief of the Bureau of Medicine and Surgery of the U. S. Navy, embracing a Statement of the Casualties from Gunshot Wounds in the Navy, from April 21, 1861, to June 30, 1865. 8vo. pp. 26. Washington: Navy Department, November, 1866.

3. *Report on the Extent and Nature of the Materials Available for the Preparation of a Surgical History of the Rebellion, made to the Surgeon General U. S. Army.* By GEORGE A. OTIS, M. D., Brevet Lieut.-Col., and Surgeon U. S. Vols. Circular No. 6. War Department, Surgeon General's Office, Washington, November 1, 1865, 4to. pp. 88.

4. *Grundzüge der Allgemeinen Kriegschirurgie. Nach Reminiscenzen aus der Kriegen in der Krim und im Kaukasus, und aus der Hospitalpraxis.* Von N. PIROGOFF. 8vo. pp. 1168. Leipzig: Vogel. 1864.

Elements of General Military Surgery, based upon Observations made in the Crimean and Caucasian Wars, and Hospital Practice. By N. PIROGOFF.

5. *Traité de Chirurgie d'Armée.* Par L. LEGOUEST, Médecin Principal d'Armée, etc. etc. 8vo. pp. 999. Paris: J. B. Ballière et Fils. 1863.

A Treatise on Military Surgery. By L. LEGOUEST, Medical Director of the French Army, etc.

6. *Military Surgery.* By GEORGE WILLIAMSON, M. D., Surgeon-Major 64th Regiment. 8vo. pp. 255. London: John Churchill & Sons. 1863.

7. *Maximen der Kriegsheilkunst.* Von Dr. L. STROMEYER, Königlich Hannoverschem Generalstabsarzte, etc. etc. 8vo. pp. 594. Hannover: Hahn. 1861.

Maxims of Military Surgery. By L. STROMEYER, M. D., Surgeon of the General Staff of the Royal Hanoverian Army, etc.

8. *Militär-Chirurgische Studien in der Italianischen Lazarethen von 1859.* Von Dr. HERMANN DEMME, Docenten an der Universität Bern. 8vo. Erste Abtheilung. Allgemeine Chirurgie der Kriegs-

wunden, pp. 190. Zweitze Abtheilung. Specielle Chirurgie der Schusswunden, pp. 285. Würzburg: Stahel. 1861.

Studies in Military Surgery from Observations in the Italian Hospitals in 1859. By HERMANN DEMME, M. D., Lecturer in the University of Bern. Vol. I. General Surgery of War Wounds. Vol. II. Special Surgery of Gunshot Wounds.

9. *Notes on the Surgery of the War in the Crimea, with Remarks on the Treatment of Gunshot Wounds.* By GEORGE H. B. MACLEOD, M. D., Lecturer on Military Surgery in Anderson's University, Glasgow, etc. etc., pp. 429. London: Churchill. 1858.
10. *Medical and Surgical History of the British Army which served in Turkey and the Crimea during the War against Russia in the years* 1854–55–56. Parliamentary Blue Book. 2 vols. 4to. Surgical Section. Histories of Wounds and Injuries. By T. P. MATTHEW, Staff Surgeon. Vol. II. pp. 146. London, 1858.
11. *On Resection in Gunshot Injuries.* By Dr. FRIEDRICH ESMARCH. Slightly abridged and translated by S. F. Statham. 8vo. pp. 69. London: Tatton. 1856.

PREVIOUS to the time of Ambrose Paré, who must be regarded as the founder of military surgery as a distinct science and art, gunshot injuries were considered as poisoned wounds; and we find, therefore, that Brauns Weig, a surgeon of Strasburg, John of Vigo, and other physicians of the 15th century, treated these lesions with the actual cautery, boiling oil, and other harsh styptics. The most eminent surgeons of the early part of the 16th century made no advances on the teachings of Albucasis, but contented themselves with the indiscriminate application of the various unguents and plasters which had been recommended by the distinguished Arabian. Alphonse Saenza, Surgeon to Paul III. from 1534 to 1549, in the early part of his career, held the same views as Weig and John of Vigo, as to the poisonous nature of these lesions; but later he made some important improvements in their management. He gave good advice on the search for balls, the dressing of gunshot wounds, and the extraction of foreign bodies, for which he invented an instrument which he termed the Alphonsin. About this period Paré published his treatise on gunshot wounds, which was shortly afterwards followed by the work of Maggi, of Italy. To these authors is due the merit of having exposed the errors of their predecessors, and of having invented the first sound precepts on the treatment of injuries by gunshot. They showed that powder produced no poisonous effects; did away with the hot iron and other cruel measures; advised the extraction of balls, and invented instruments for their removal; and employed expulsory bandages to facilitate the escape of foreign substances, and to relieve œdema of the extremities. Leone, Botal, and Fallopius at once embraced the views of these eminent masters; and Felix Würz, of Germany, about 1576, wrote against the employment of too complicated instruments for the extraction of balls, deprecated trephining for depressed gunshot fractures of the skull, advised the discontinuance of the application of fatty substances to gunshot wounds, and insisted upon the antiphlogistic treatment.

Upwards of three centuries have elapsed since Paré established military surgery as a special department of medical science; and during this long period many important and valuable additions have been made to it by the publication of general and special treatises on gunshot and other injuries incidental to war. In England, the first work on military surgery was that of Thomas Gale, a contemporary of Paré, his "Treatise on Gunshot Wounds" having appeared in 1563. This was followed in 1612 by the "Chirurgeon's Mate," by John Woodall; in 1676, by the "Eight Chirurgical Treatises" of Richard Wiseman, one of which is devoted to gunshot wounds; in 1678, by the "Treatise on Gunshot Wounds," by John Brown; in 1744 by "The Method of treating Gunshot Wounds," by John Ranby; and, towards the close of the same century, by the great work of John Hunter. The literature of the present century has been enriched by the works of Chevalier, Hennen, Guthrie, Ballingall, Williamson, Cole, Hutchison, Thomson, Longmore, and Macleod, the invaluable treatise on military hygiene from the pen of Dr. Parkes, and the Medical and Surgical History of the British Army which served in the Crimea.

In France, the works on military surgery and the writings of Percy, Mossot, Fournier-Pescay, Ribes, Dufouart, Desport, Saurel, Ledran, Roux Bégin, Baudens, the Larreys, Malgaigne, Dupuytren, Jobert, Gama, Serrier, Méhée, Valette, Ménière, Desgenettes, Guyon, Sédillot, Salleron, Chénu, and Scrive, may be referred to. Many of these are highly valuable. The most prominent treatises on military surgery which have been published in Germany, are those of Schmucker, Bilguer, Stromeyer, Esmarch, Langenbeck, Demme, Neudörfer, Beck, Hecker, Simon, Schwartz, Djorup, Niese, and Lohmeyer, nearly all of which possess great merit. In Italy, the only modern authors in this branch, so far as we know, are Appia, Paravicini, Gherini, Porta, and Larghi. The only work that has emanated from the pen of a Russian surgeon is that of Pirogoff, and it is to be regretted that his "Elements of Military Surgery" have not been made accessible, as they contain the very valuable experience of an eminent and acknowledged master in his profession.

In our own country, in 1816, Dr. James Mann published a volume entitled "Medical Sketches of the Campaigns of 1812, '13, and '14." During the late war, the only works which appeared on military surgery were those of Drs. Tripler and Blackman, Professor Hamilton, and the small volume of Professor Gross, issued as hints for the field surgeon. None of these works are more than mere outlines; and we anticipate, therefore, with high expectations, the appearance of the surgical history of the late war, based, as it will be, upon nearly two hundred thousand cases of injuries. The contents of Circular No. 6, in itself a valuable and handsome production so far as the statistics to which it applies have been worked up, bear ample evidence that Dr. Otis, the surgical historian of the war, is fully qualified to cope with the immense task that has been enjoined upon him by Surgeon General Barnes. A summary of the report of Dr. P. J. Horwitz, Chief of the Bureau of Medicine and Surgery of the U. S. Navy, was given in No. CV. of this Journal. No more need therefore be said of it at this time than that it is highly interesting, and creditable to those concerned in its preparation, and that if the materials were more fully examined, it would form the basis for an excellent treatise on naval surgery. We hope that some member of the medical staff of the Navy will act upon this suggestion, and produce a volume which will reflect further honor on a corps, which, in point of ability and attainments, probably excels that of any other Navy. We have used both of these reports largely in the preparation of our statistical tables; and although the numbers represent only those cases which had been determined or finished in the U. S. Army up to November 1st, 1865, still they will be found very valuable, as they have, at least to our mind, had the effect of settling certain questions, upon which there was previously a lack of sufficient information. In this cursory notice of works upon military surgery, we must mention those of Henderson, Coolidge, Tripler, and Bartholow on the examination of recruits, the treatise on military hygiene by Dr. Hammond, formerly Surgeon-General of the U. S. A., and the interesting brochure on injuries of the nerves by Drs. Mitchell, Morehouse, and Keen.

The present article has been prepared with the view of presenting our readers with an analysis of the chapter on injuries of the head, by Dr. Neudörfer, the latest author on that subject, as well as an examination of gunshot injuries of the bones and joints, based upon all the works which appear at the head of this article, and which represent the surgical histories of the wars in Schleswig-Holstein, the Crimea, Italy, and partially that in the United States. The work of Dr. Neudörfer has been reviewed at some length, for the reason that the author advises a course of treatment in gunshot and other wounds of the skull and brain, which is at entire variance with that of other eminent writers, and which, if adopted, would at once dispel all our preconceived views as to the proper management of these grave lesions. We have chosen an analytical rather than a critical course in handling these topics, since we think that our readers will be better satisfied if we permit the author to speak for himself on subjects of such vast practical importance, particularly as the chapter bears evidence that he is deeply impressed with the truth of the doctrines that he endeavours to inculcate. The subject is treated with marked ability and clearness, and although we differ from Dr. Neudörfer on many points, yet his large experience in Schleswig, Italy, and Mexico, where he lately served as Medical Director of the Austrian forces, gives great weight to his views, and entitles them to earnest consideration. In our analysis of the second class of injuries, we have prepared tables with great care, which show the comparative advantages of the different modes of treating gunshot fractures of the bones and joints, our aim having been to deduce from this mode of examining the subject the proper course to be pursued as far as saving life is concerned, which is the great object that we should endeavour to attain, holding, as we do, the preservation of the limb to be of secondary importance. These tables will be found to contain, in some instances, hundreds more of cases than any that have heretofore appeared, and as their accuracy can be relied upon, they will, without doubt, be found valuable for future reference. In referring to authorities, we make use of the name of Staff Surgeon Matthew, for the statistics bearing upon the surgery of the British Army of the Crimea, of that of Surgeon Otis, for the statistics of the U. S. Army; and of that of Dr. Horwitz, for the statistics of the surgery of the U. S. Navy, a course which we have been compelled to adopt, as it is more convenient, and does not at all detract from the statistics being official.

With the exception of similar injuries of the face, there is no region of the body in which incised, contused, and lacerated wounds of the soft parts unite so readily by first intention, as those of the *scalp*, provided they are not subjected to meddlesome treatment. This assertion we believe to be true, but the position held by our author that wounds limited to the scalp are more rare than those complicated by injury to the cranium and its contents is more open to objection, since we find that of 5046 gunshot injuries of the head which occurred in the U. S Army during the late war, 3942, or 78.12 per cent., were examples of wounds and contusions of the scalp, while only 1104 cases, or 21.87 per cent., were recorded of injury of the bones of the skull, the brain, or its membranes.

In the treatment of these lesions, after having cleansed the parts and removed foreign substances, the surgeon should always have in view the production of primary union. When the wound does not gap, absolutely nothing in the way of dressings will be required; but when there is a tendency to retraction of the edges, they should be approximated by a few points of suture, the scalp having previously been divested of hair. Dr. Neudörfer does not regard sutures of the scalp as dangerous, and combats the very popular but erroneous idea that they give rise to erysipelas. He considers that they are particularly indicated to prevent inversion of the lips of the wound, which so often delays the healing process for months, on account of the growth of the hair before cicatrization is completed. So far as the result is concerned, he has witnessed no difference from the employment of silk and metallic threads; but he gives the preference to the former, as they inflict less pain, and are more easy of introduction and withdrawal. It sometimes happens that, without any loss of substance, the edges are separated to such an extent that they cannot be brought into contact without employing considerable traction. In such cases stitches should not be used; but the most elegant and effectual mode of dressing will be found to consist of strips of linen which cross the wound, and are retained in place by means of collodion. Our author very properly objects to the use of adhesive plaster, which is recommended by the majority of army surgeons, to the exclusion of sutures, on the grounds that it does not maintain the edges of the wound in contact for any length of time, and that it defeats primary union by promoting suppurative action.

Such is the simple mode of managing scalp wounds employed by Dr. Neudörfer, a course of practice that we most heartily indorse. We have been struck by the fact that so far from advising the application of cold, rigid diet, and antiphlogistic treatment, as expectant measures, so much insisted on by the majority of writers on military surgery, he does not even refer to them. We are informed by Dr. Otis that, in our late war, an expectant treatment was not deemed essential; and our own experience has been that this class of injuries is not followed by high inflammatory action as often as writers would lead us to infer. We remember one case in which a large semilunar flap had been raised from the vertex and sides of the skull, which presented a wound of upwards of thirteen inches in length. We approximated the edges by eight or nine points of the silver suture, and on the fourth day union was perfect. With the exception of restricting the diet, no general treatment was adopted.

Passing over several pages of physiological observations on the circulation of the normal skull, the object of which appears to be to prove that a compression of the base of the brain cannot be relieved by trephining or the elevation of depressed bone, we proceed to a notice of gunshot injuries of the bones of the skull, the brain, and its membranes, subjects which occupy the bulk of the chapter. Although we must here complain of a great want of methodical arrangement, we shall content ourselves with following the course laid down by the author.

"Contusing and glancing shots will either occasion fissures, fractures, or depressions, or not interfere with the integrity of the skull at all, according to the velocity of the projectile, and the elasticity and power of resistance of the bones." In the latter event, an examination shows a round, irregular, hard swelling, due to rapid exudation under and upon the periosteum, which may convey to the inexperienced surgeon the sensations of a fracture. The soft parts in the neighbourhood of the *contused* bone are infiltrated with blood, although they may be exsanguine and ultimately die. These cases are not often fatal, and for that reason do not demand extended notice. Of forty examples of contused skull observed by our author, all recovered; and in only two were there any remote effects, the patients, after the lapse of several years, complaining of a dull, heavy pain at the point struck, and occasionally suffering from hemicrania. In regard to the secondary effects of these lesions, Dr. Neudörfer, much to our surprise, barely admits that an apparently insignificant injury of the bone may be followed by persistent neuralgia, acute osteitis, necrosis, or caries, and even be the starting point of pyæmia; but he considers that these dangers have been greatly magnified, and that the cases will do well if left to the efforts of nature, and if meddlesome treatment be avoided. If there be an open wound in connection with the contusion of the bone, it will pursue a more favourable course the less it is interfered with, the process of healing being conducted under a scab of blood or pus. All moist and cold applications must be studiously withheld, and, with the exception of keeping the bowels soluble, no medicines will be required. In the course of a few weeks the crust will drop off, when the parts will be found to have filled up.

The most frequent injuries of the head by gunshot that come under the observation of the army surgeon, are those in which the bones are fractured, or the skull penetrated; but the latter, according to the experience of the author, are by no means necessarily fatal. Without entering into a general description of the different forms of fracture, Dr. Neudörfer at once proceeds to an examination of their effects upon the brain and its membranes; and of *concussion and contusion* he says:—

> "The elastic skull may be struck by a projectile in such a manner that it is thrown into a series of vibrations, which diffuse themselves over its entire surface, and are transmitted to the brain. The bloodvessels are not ruptured, nor is there any apparent solution of continuity of other structures; but the delicate processes of the ganglion cells are lacerated, and their contents, as well as the medullary substance of the elementary nerve fibres, are coagulated, by which the transmission of the nervous fluid, and the functions of the central nervous system are partially or totally interrupted. To these conditions, which cannot be appreciated with or without glasses, I apply the term concussion of the brain. If, on the other hand, the shocks imparted to the brain are so severe as to rupture the bloodvessels, or lacerate the microscopic elements of the brain, or effect a very marked change in their form, consistence, or colour, the injury is known as contusion of the brain."

Vibrations of the skull may also give rise to lesions of the membranes of the brain. The dura mater may be separated from the bones, or any of the membranes may become the seat of acute or chronic exudations, and even partial necrosis.

The diagnosis of primary concussion and contusion of the brain is impossible. They may exist separately; but the symptoms of both affections are generally so intermixed that the real nature of the lesion is not apparent. The signs attributed to concussion, such as loss of consciousness, collapse, small, scarcely perceptible pulse, and lowered temperature, are met with in other affections of the brain, and merely indicate that the functions of that organ and their influence on the system at large are in a state of abeyance. It can, therefore, only be declared that the brain was concussed or contused in the first instance, if the symptoms continue. The signs of both affections are usually so blended that Dr. Neudörfer declares that in all of his very rich opportunities of observing extensive wounds of the skull and brain, he has never seen concussion, properly so-called, except in apparently trivial injuries.

Compression of the brain may be produced by effusions of blood, depressed fractures, foreign bodies, hyperæmia, or exudations. When the compression is partial, or is limited to a small point of the brain, it occasions no symptoms by which it can be certainly distinguished; but when it involves the greater portion of the brain, it gives rise to certain signs, which, in the first stage, or that of incipient compression, are very variable, and cannot be relied on. It is only when the compression is severe, that the symptoms are decided; but these do not appear until late, and never before the second or third day after the infliction of the injury; when they last generally for six or seven days, when consciousness returns, but is soon followed by death. The symptoms of compression portrayed by the author do not differ from those laid down in other works; but he considers that the full, slow pulse is the most reliable of all.

Primary *thrombosis*, or spontaneous coagulation of the blood within the vessels during life, is very seldom met with as a result of gunshot injuries of the brain; but secondary thrombosis is more frequent, and depends, in great measure, according to the author, upon the erroneous mode of treating these lesions. There are no pathognomonic signs of the affection; its consecutive effects upon the brain, as œdema, hemorrhage, inflammation, gangrene, and embolism, are indicated by symptoms which are merely those of suspended cerebral function, and are met with in other pathological conditions. Thrombosis may, therefore, be surmised, not diagnosed. Embolism, the effect of thrombosis, is rapidly fatal; but, from the foregoing statements, it is evident that it is not regarded as particularly dangerous of a primary affection, but that it is liable to be lighted up during the course as a bad treatment.

Inflammation of the *membranes* of the brain is another sequence of gunshot wounds of the skull. Pachymeningitis, or inflammation of the dura mater, is developed slowly, runs a chronic course, is usually limited to a small extent of the membrane in the immediate vicinity of the wound, and should be regarded as an inflammation of the inner periosteum of the cranial bones. In the cases that terminate favourably, it will be found that all the membranes of the brain, and bones, are firmly bound together by a dense connective tissue. The secondary effects of pachymeningitis are thickening, new formations, and necrosis of the skull, which may, in rare instances, call for removal of the sequestra. The second form of inflammation, to which our author directs attention, is leptomeningitis, or simply meningitis, in which the arachnoid and pia mater are involved. It usually pursues an acute or subacute course, is very seldom chronic, and may be lighted up at any period after the reception of the injury. Meningitis is an invariable result of all penetrating gunshot wounds, and is due to the irritation produced by the contact of atmospheric air. Provided the patient be in good health, is not suffering from any so-called dyscrasia, and meddlesome treatment be avoided, the inflammation will be circumscribed, and limited to the wounded spot, and need not excite alarm. Indeed, such an inflammation being of a reparative nature, it should be left alone, so that the granulating process may proceed favourably, which it certainly will not do, if the usual treatment be adopted. When, on the other hand, the inflammation becomes general, it proves to be the most frequent cause of a fatal issue in this class of injuries. Of the diagnosis, symptoms, and course of meningitis, Dr. Neudörfer, remarks :—

> "There are no symptoms which point exclusively to inflammation of the pia mater and arachnoid; the only constant if not reliable sign, being a fixed pain in the head, which is present from the very outset of the complaint, or very rapidly sets in. The patient mechanically supports and compresses his head, but all the other symptoms are common to inflammation of the brain in its several forms, and to some extent even to concussion. The affection sets in, as is the case with so many acute diseases, with a chill. The pulse becomes accelerated, the temperature rapidly rises, but the thirst is not excessive; the patient is restless, he cannot sleep, loses his appetite, supports his head, and complains of headache. Conception and memory are impaired, he is mentally apathetic, but still sensitive to many external impressions, and is disagreeably affected by light and noise, which may even excite convulsions. At the expiration of the second day, and, at the furthest, the third day, consciousness is abolished, the patient is soporose, but he moans and carries his hand to his head; the pulse remains accelerated, but of small volume; muscular contractions and convulsions set in, and we now find added to the symptoms of meningitis those of compression, disturbed circulation, and encephalitis. The pulse becomes slow and full, the moaning ceases, the respiration is blowing or stertorous, and very often hemiplegia affects the side opposite to that of the wound. The pupils may be contracted or dilated, one condition being about as frequent as the other. As the disease progresses, the pulse increases in frequency, the alvine and urinary discharges are involuntary, and death generally ensues from paralysis of the brain. In some rare cases, the fatal issue is immediately preceded by violent convulsions; and it may even happen that the patient regains his senses, makes no complaints, and feels well. These deceptive appearances would hold out a hope that the disease had taken a favourable turn, were it not for the small, rapid pulse, the collapse, and corpse-like expression of the countenance."

In regard to the causation of general meningitis in fatal cases, the author holds that it is often to be referred to blood diseases, and especially pyæmia; but more frequently to the bad treatment usually employed. Army surgeons will learn with astonishment that the use of the probe in the examination of gunshot wounds of the skull, and the resort to forceps for the extraction of foreign substances, but particularly the local application of ice and moist dressings, are the most fruitful sources of fatal inflammation of the meninges of the brain. Until they curb their very natural desires to ascertain the extent of the injury, and extract balls and other foreign bodies, we are assured, by Dr. Neudörfer, that the occurrence of fatal meningitis will not be diminished.

As *inflammation of the brain* seldom exists as a separate affection, but is generally combined with concussion, contusion, and meningitis, the author does not describe its symptoms, progress, and terminations, but passes on to the consideration of the retention of foreign bodies within the substance of the brain, which may excite local or general encephalitis. As regards the rare instances of complete encystment of balls, they are of no practical interest; but the cases of partial encystment, or those in which the missile or spicula of bone are temporarily retained, and communicate with the exterior by a fistulous track, without being productive of bad results, are more frequently met with; and they present the peculiarity of becoming loosened, and effecting a spontaneous exit, or when they have reached the surface, they can readily be removed by the surgeon or patient.

> "We have," says the author, "met with many such cases in Italy, Schleswig, and Mexico, from which we select the following illustrations: An infantry

soldier was struck at Magenta by a ball which passed through his shako, penetrated the vertex near the sagittal suture, and occasioned paralysis and cerebral symptoms, which gradually disappeared. The man was admitted into the invalid depot at Prague, where he performed the duties of a cook, and cut and carried wood. At this time there was a fistulous opening at the vertex, which occasionally discharged a small quantity of pus. At the expiration of three years, he accidentally discovered a rough and somewhat movable body at the opening, which was removed by a comrade with a pair of tooth forceps, and proved to be a minié-ball, which must have carried with it into the brain some of the felt of the shako, since the fistule was remaining open in 1862. Two analogous cases fell under my observation at Puebla. In one, a piece of a ball made its exit by the fistulous orifice on the hundred and twenty-fifth day. In this instance there was also complete hemiplegia, which had, however, so far disappeared at the end of ten months, when the man left the hospital, that there was merely a weakness of the affected half of the body. The fistule remained open, a fact which rendered the presence of other foreign substances highly probable. There could be no doubt that the ball was imbedded in the brain, as the skull and membranes were opened to the extent of two and a half square inches, through which the fistule could be seen to be seated in the exposed brain. The second case refers to an officer who was struck at Tlapacoyan by a bullet which penetrated the middle of the frontal bone, an inch above the limits of the hair. The projectile fell out of the wound on the field of battle, and several days subsequently some loose fragments of bone were extracted, which exposed the brain. The wound granulated without a bad symptom, and at the expiration of four months, small spicula appeared at the fistulous orifice, which, up to that time, had remained in the brain without having excited any trouble."

In the treatment of gunshot injuries of the skull and brain, Dr. Neudörfer advances the proposition, that if antiphlogistic measures be deemed unnecessary in the management of wounds in general, they should be regarded as positively injurious in the treatment of the class of wounds under consideration ; and he endeavours to show that bloodletting, leeching, the application of cold, purgatives, strict diet, mercury, and antimonials, are not only not to be employed as expectant measures, but they should be discarded altogether. He dwells at considerable length upon the pernicious effects of ice, alleging that its application is often the starting point of thrombosis, pyæmia, and meningitis. We quote the following passages as expressive of his views and mode of reasoning upon the inefficiency of cold as an antiphlogistic agent :—

"It is evident that the supply of blood of any organ depends upon the action of the heart, and the number, size, and powers of resistance of its vessels ; so long as these factors are not changed, the mass of blood circulating in the organ remains the same. This position applies to the brain, with the distinction that the quantity of blood carried by the carotids to the structures within and without the skull are capable of compensation, that is, if there be a resistance to the circulation within the skull, the quantity of blood on its exterior will be increased, while if the reverse be the case, the greater part of the blood will be carried to the interior of the skull. Ice applied to the head can exert no direct influence upon the heart's action : we can only admit of a reflex influence, but it remains to be proved that the reflex action is capable of diminishing the frequency and force of the pulsations of the heart ; and if, indeed, such were the case, it would certainly be more rational to apply ice to the breast instead of to the head. Cold acts locally by constringing the bloodvessels of the scalp, and, on account of their diminished capacity, a part of the blood, which should have been distributed to the exterior, is now directed to the interior of the skull, since the entire amount sent to the head has undergone no change. Instead, therefore, of the vessels of the brain being emptied of blood, through the application of cold, a directly reverse effect is produced ; they become congested, and, as a result, injurious consequences must ensue. It appears to us that it would be

> more proper to cover the head with warm applications, by which the volume of the vessels of the scalp would be increased, and, on account of their increased capacity, a part of the blood would be directed from the brain to the exterior of the cranium."
>
> "Experience goes to show that even upon the peripheral nerves cold acts very disadvantageously, by greatly weakening, or entirely abolishing the transmission of the nervous fluid."
>
> "The brain is inclosed in a firm case, which is protected at its base by the surrounding structures, and on its convexity by the hair, which is a bad conductor of heat. We see how carefully old and bald men guard their heads against all changes of temperature, and we can hence imagine the influence which cold would exert when brought in direct contact with an organ that is so carefully protected by nature against all changes of temperature. Although accurate experiments are wanting to demonstrate the action of cold upon the exposed brain, yet we may judge from analogy that it would be of a paralyzing or destructive nature, and that it should, on these accounts, be avoided."

It is thus to be perceived that the author does not recognize the all-important fact that, in ice, we possess the most powerful means to produce a reflex contraction of the bloodvessels, thereby diminishing the actual amount of blood circulating in a part.

In the discussion of general and local bloodletting, Dr. Neudörfer very properly draws a distinction between those injuries of the skull and brain that are attended by a determination of blood to the head, and those in which the brain is partially robbed of its due supply, or is in a state of anæmia. In the latter condition where there is often loss of consciousness, and other symptoms indicative of cerebral disturbance, the administration of wine and other alcoholic stimulants is positively indicated; and if abstraction of blood and other antiphlogistic measures be resorted to, the symptoms will be greatly aggravated, and the fatal issue hurried on. The following case is adduced by the author as a striking illustration of the benefits to be derived from stimulants in this class of cases; and he refers to it designedly, for the reasons that his plan of treatment excited much surprise at the time, and, in spite of its favourable termination, called forth many harsh comments.

> "A man was struck by a ball which fractured the left parietal bone, and exposed the brain. For the first few days he was treated by a distinguished surgeon, who applied ice bags to the head; but when he came under my charge, he was restless, would not tolerate local applications, his intellect was clouded, he gave utterance to incoherent expressions, and his pulse was small and weak. I then recognized the fact that certain injuries of the skull may be attended with an ænemic condition of the brain, and ordered, much to the astonishment of those present, half a bottle of wine to be administered during the day. In a few hours the man was quiet, and he soon regained his consciousness. Recovery followed without medication or operation, and many spicula of bone were discharged from the brain, into which they had been driven at the time of the injury."

It is thus evident that it is not always desirable to diminish the quantity of blood circulating in the brain; but in opposite conditions, where the irritation of the injury has created an afflux of blood to the brain, the author urges that the cause will continue after the abstraction of blood, and that the relative, and probably even the absolute amount of blood circulating in the brain, will be little, if at all, diminished by the operation. As regards leeches, their action is less injurious than that of venesection; and, fortunately for the patient, they are generally not attainable in field practice. We conclude this subject with the following pertinent extract:—

> "We will only add that we have had opportunities of treating not an insignificant number of gunshot wounds of the skull and brain in various climates, and even in different parts of the world; that we have never employed cold nor bloodletting, and that our results were not more unfavourable, perhaps better, than the average of those cases which we have seen managed by these measures."

Passing on to an examination of the articles of the materia medica, the value of which has been variously estimated by authors on military surgery, when applied to this class of injuries, we find that Dr. Neudörfer is not inclined to place much faith in any remedy. Antimonials, which enjoy great repute with the French, may be employed in broken doses for their alterant effects, when they will do no harm, even if they do no good. Mercurials, which are highly spoken of by English surgeons, on account of their power of diminishing the plasticity of the blood and preventing inflammatory exudations, are not indicated for these objects, since in serious injuries of the cranium, we have not to deal so much with a perverted condition of the blood which favours exudation, as with an irritation due to the injury, which disposes to inflammatory effusions, and cannot be affected by the administration of mercury. For this reason it has no action on the brain, and need, therefore, not be employed. As a purgative, calomel, alone, or in combination with jalap or rhubarb, may be exhibited, but it acts no better than any other article of its class. In regard to opium, against which so much prejudice unfortunately exists, and the reviewer speaks advisedly, in wounds of the brain, our author makes use of the following language:—

> "In all works on materia medica, to opium is ascribed the action of producing congestion and excitation of the brain, and a post-mortem examination of persons dead of opium poisoning verifies these statements. The result has been that the article is feared in all wounds of the cranium, and when it becomes necessary to employ a narcotic, some other agent is selected, since the impression is prevalent that opium should be avoided under all circumstances. Our own views on the subject are as follows: There are some persons, even if they are not wounded, who cannot bear opium in the smallest doses; but these idiosyncrasies are happily rarely met with. The majority of individuals are not affected unpleasantly by the article; and it, therefore, becomes a question whether opium, on account of its peculiar property of exciting the brain of the few, should be excluded from the therapeutics of injuries of the skull. The answer is clear. Congestion of the brain is only produced by full doses of opium; in small doses, it is questionable whether its peculiar action is called forth, and even if it is, the dose can be proportioned to the effect produced. As we have already pointed out, there are some wounds of the cranium in which a hyperæmic condition is desirable, and in which, therefore, opium will fulfil the object. On the other hand, cases occur in which congestion of the brain is a prominent feature, and here we may substitute some other article. We must, however, add that the exhibition of opium in the first few days after the reception of the injury appears to lessen the irritation so much that the patient conducts himself as a well man. I must, therefore, recommend to my colleagues the immediate administration of solid opium, not morphia, in such injuries, in doses of one-eighth of a grain, every four or six hours, so that they may observe how far my observations are entitled to imitation."

Much more important than the question of general remedies is that of diet, and we here find that the author, acting upon his convictions that inflammation and its consequences are by no means to be regarded as necessary results of these lesions, advises that the food be nourishing, easy of digestion, and sufficient in quantity to appease the appetite. Excess must be avoided; but if the patient be not disposed to eat, he should be allowed any little delicacies that he may crave, and a small quantity of wine should also be permitted during the day. If these points be neglected, and the diet restricted, the case will pursue an unfavourable, or at any rate, a protracted course. The following extracts express the reasons which induced Dr. Neudörfer to pursue a course of dietetic measures which is so utterly at variance with that generally adopted, and advised by many surgeons.

> "It must be borne in mind that hyperæmia of the brain is less to be feared than the opposite condition, and that our efforts should be directed to maintaining that organ in such a degree of turgescence that it will remain on all sides in close contact with the skull, since under these circumstances alone will a wounded brain comport itself as one that is normal. Indeed the circumstance cannot be too strongly insisted upon that, as soon as the turgescence of the brain—be it through too restricted a diet, loss of blood, or irritation of the injury—has become so much diminished that the greater part of its surface is not in direct contact with the skull, it will be exposed to constant inflammatory irritation from ordinary external influences.
>
> "The contact of air and the weight of the brain which exert a pressure upon its base, which compression will be transferred to other points in the different postures of the body, and probably also the shocks through the pulsations of the heart, which are now no longer limited to the seat of the injury, are dangers which generally excite inflammation, and are followed by a fatal issue. Holding these views I allowed myself to be tempted to make cautious trials of wine in wounds of the brain, and these experiments have succeeded so well that, at the present time, I have no fear of ordering from the eighth to the sixth of a litre in the twenty-four hours. For the past seven years I have been in the habit of administering wine and a nourishing diet in the worst cases, and in the majority of wounds that I have treated, I have found no occasion to depart from this rule. Nevertheless I do not venture to recommend this course to young surgeons, who have had no experience."

We have now followed our author through the general management of gunshot injuries of the scalp, skull, and brain; but it must not be concluded that he contents himself in all cases merely with dressing the wound with a view to the exclusion of air, and the administration of opium, wine, and a nourishing diet. Should symptoms of inflammation of the brain and its membranes arise, his great antiphlogistic measure, the only one that he employs, is digital compression of the carotid artery. It should be alternating and intermittent, and be continued from three to seven minutes, several times a day. Although he especially states that the articles of the materia medica are not essential to the cure of these lesions, and enters an emphatic protest against a prophylactic treatment, and the empirical resort to a remedy, because an author states that such and such an article has been productive of good results, yet it may be seen that he watches his cases carefully, and treats complications as they arise. Were this precept inculcated by the majority of authors on military surgery, instead of surrounding the subject with all conceivable dangers and difficulties, we feel confident that this class of injuries would be divested of many of its terrors, and that the young surgeon particularly would undertake their conduct with better hopes of a successful issue.

The *extraction* of balls, splinters of bone, and other foreign substances lodged in the brain is almost universally regarded as the proper course to pursue when they can be readily got at; but we find that, in this regard, Dr. Neudörfer is as extreme in his views as we have seen him to be concerning general measures. He holds that their retention in the brain is attended with less pain, and fewer dangers and inconveniences than in other parts of the body, and that the fears that they will excite general encephalitis, meningitis, or gangrene, are substantiated neither by theory nor facts. Experience goes to show that balls sometimes remain encysted in the brain, and if this be not the case, that they invariably, sooner or later, effect spontaneous discharge. Their detection and extraction are attended with many difficulties, and may even require elevation of depressed bone, or the application of the crown of a trephine, procedures to which our author decidedly objects. His arguments against attempts to remove foreign bodies, and in favour of leaving them to the efforts of nature, are comprehensive, and are supported by four examples, which we have already quoted, of what he terms partial encystment, in which a certain expulsive force on the part of the brain was sufficient to effect riddance of projectiles and splinters of bone. He also adduces a most interesting case of this nature, of which the following is an abstract, where the presence of splinters was not even suspected, and in which ligation of the carotid artery on the side corresponding to the wound arrested a threatening hemorrhage, an operation advised also by Bouchet and Demme, but condemned by Légouest.

"An officer was struck at Solferino, June 24, 1859, by a ball which fractured the right parietal bone, and exposed the brain. For three weeks he received no particular attention, as the surgeons were overburdened with work, when he came under the charge of the author. The opening in the skull was finely fissured, about the size of a thaler piece, and it, together with the brain, was covered with granulations. He was free from all symptoms; an ordinary dressing of greased lint was applied, and in the course of six weeks, twenty-two spicula were discharged. The wound began to grow smaller; but on the 5th of September, the granulations withered, he complained of headache, lost his appetite, suffered from high fever, thirst, and disturbed cerebral functions, and the pulse was frequent. As these symptoms were believed to be indicative of an attack of typhus, quinia and acids were ordered. On the evening of the 11th inst., Dr. Neudörfer was called to the patient, whom he found almost pulseless from the loss of about three pounds of blood. Digital compression of the carotids was at once resorted to, quinine and wine administered, the wound was cleansed, but the source of the hemorrhage could not be discovered. On the following morning, the bleeding recurred, and as the patient was too restless to submit to compression with the fingers, and it was feared that a third loss of blood would prove fatal, the right carotid was tied. The patient recovered his strength under quinine, iron, and wine, and at the end of two months the wound had diminished to the size of a hazel-nut, when it was believed that all dangers were passed. In the seventh month, however, erysipelas of the scalp and face set in, the intellect was clouded, the entire cicatrice of the brain was œdematous, and of a bluish-red colour, and the diagnosis was gangrene of the cicatrice, renewed hemorrhage, and early death. This unfavourable prognosis was not fully realized, as a small spot only of the scar died, the erysipelas disappeared, the general symptoms abated, and, finally, four small spicula were discharged from the brain. After this, the officer made a rapid recovery, and at the present time, November, 1866, enjoys perfect health."

Our author regards the above case as an excellent example of the efforts of nature in effecting a cure, and of the expectant mode of treating such injuries. It is quite evident that nothing could have been done in the way of extracting the splinters of bone, as they were deeply seated, and their presence was not even suspected; but we think we will not be considered singular in our opinion that, could the splinters have been removed, the evil results which followed the injury, and which, beyond a doubt, were due to the presence of the foreign substances, would have been avoided. Be this as it may, however, Dr. Neudörfer takes the position that the extraction of foreign bodies from the brain is not absolutely necessary, and would establish the practice, in which he follows Stromeyer, "in wounds of the skull and brain, provided they be seen in the first few hours after the infliction of the injury, those foreign substances only are to be removed which can be seen, and felt by the little finger carefully inserted into the wound. Those which are not extracted within the first twenty-four hours, should rather be left to the expulsive efforts of nature."

As regards the *elevation* of depressed bone, our author maintains that there are no indications which render the operation necessary, that it is often attended with great difficulties, and that the brain possesses the faculty of accommodating itself to apparently very extensive compression. Without following his arguments, we will merely state that he considers elevation admissible only when there is a sufficiently large opening present, and when there is enough space between the dura mater and skull to admit of the easy introduction and free play of the elevator, and when moderate force suffices to raise the depressed portion of bone. Even under these favourable circumstances, he does not consider the procedure as called for, but since it will be productive of no bad results, he offers no objections to it.

The operation of *trephining* is as pointedly condemned by Dr. Neudörfer as it is by Dr. Stromeyer. In his discussion of the classes of cases which are regarded by some authors as calling for the procedure, he dismisses all with the exception of those in which there is an intra-cranial collection of pus, and of these he says :—

> "The only cases for the operation are those in which pus is effused either on the surface of the brain or on its membranes, both of which conditions, on account of the unyielding nature of the vault of the cranium, will prove fatal, unless the pus be evacuated. In spite, however, of the many symptoms that are laid down in surgical works, there is really not a single certain sign of increasing suppuration, or of compression of the brain through pus; and if we cannot observe a few drops of that fluid escape through a fissure or the breach made by a fracture, we cannot, as a rule, diagnose its presence, since the symptoms of so-called compression are also referable to other circumstances. Abscess of the brain cannot be benefited by the operation, on account of our being in the dark as to the exact point to which the crown of the trephine should be applied."

The formation of pus within the skull is, according to the observations of the author, a rare event, since of upwards of fifty sections which he has conducted of bodies dead of wounds of the skull, in only one instance was there any evidence that the trephine could have done any good. He urges, moreover, that as far as the chances of life are concerned, the operation will be futile, as the cause of the formation of pus will continue, even after the skull has been opened. Notwithstanding this, however, he considers that trephining, or rather opening of the skull, is as much indicated in these cases, as a last resort, as are bronchotomy or herniotomy.

Dr. Neudörfer is so much prejudiced against the trephine *per se*, that he not only does not use it himself, but advises that it be excluded from the armamentarium of the army surgeon. In those cases where foreign bodies, as broken blades, have penetrated the skull, and remain firmly fixed, and partly protruding on the exterior, he would substitute a sharp gouge, or chisel, and mallet, with which a sufficient amount of the bone can be cut away to afford a firm hold for the forceps for the purpose of extraction. In the few instances that he has observed of a small fissure leading to a collection of pus between the dura mater and bone, he has also resorted to the same instruments, with a view of widening the opening to afford a more ready exit for the pus; and in this practice he is upheld by Dr. Demme.

Now, although the chisel and mallet will doubtless answer the purpose of enlarging openings in the skull, we must confess that we think that our author is running into an extreme, which is unworthy of his high reputation as a military surgeon and author. Leaving out of consideration altogether the fact that in either operation the skull is opened, and air gains free access to its interior, a point, to which, according to our views, too much importance has been attached, we cannot for a moment imagine that the trephine is a more unsafe instrument than those which he recommends: on the contrary, the blows of the mallet must produce a number of injurious shocks upon the brain, and it appears to us that a very steady hand will be required to guide the chisel, lest it slip, and penetrate the membranes or the brain itself. If the ordinary instrument be regarded as so very offensive, why should not the conical trephine, improved and reintroduced into practice by Dr. Galt, of Virginia, in 1860, be substituted for it? This instrument is perfectly safe in the hands of the veriest bungler, since, in virtue of its peculiar construction, it ceases to act when the bone has been penetrated. We presume that our author is acquainted with this form of trephine, although he makes no mention of it.

The historical sketch of trephining, in which the author traces the operation from the days of Hippocrates down to the present time, is full of historical interest, the arguments in favour of and against the operation, and the subject of hemorrhage from wounds of the sinuses and arteries of the skull, are ably discussed. When the dura mater requires opening for the escape of blood or pus, the author thinks that a large incision is less dangerous than one that is small; but he assigns no reason for this preference.

The remainder of the chapter occupies twenty-eight pages, and is devoted to the consideration of several cases illustrative of the different forms of fracture and a few of their secondary effects. One example of sabre wound of the skull presents some points of interest. A chaplain of the Mexico-Austrian Volunteer Corps was struck on the head by a sabre, which drove some particles of felt of a hussar's hat, which he wore, into the skull, the fine fissure having immediately closed over the particles of felt, so that their presence was not discovered until the post-mortem examination on the thirteenth day after the infliction of the injury. It is also not without interest to note that, in spite of a fissure of the upper surface of the skull eight inches long, complicated by the presence of foreign bodies lying on the dura mater, the patient remained well for six days, after which the case progressed without any very marked symptoms, and that they were more dependent upon blood poisoning than abscess of the brain. Notwithstanding the fact that there were numerous metastatic depots in the joints, the author ascribes the fatal issue to paralysis of the heart, which he believes to be a more frequent cause of death after injuries of the skull, than is generally supposed.

Dr. Neudörfer also refers to two instances of gunshot injuries of the head in the late war between Prussia and Austria, which were attended by temporary loss or difficulty of speech. In one, the mastoid process had been opened, but there was no evidence that the base of the skull had been fractured or fissured. By constant practice, the man was finally enabled to pronounce monosyllables. In the second case, a glancing shot grooved the frontal bone, but did not open the cranium. The patient spoke very slowly, and carried his head in such a manner that he appeared as if he could not balance it with safety. These cases were under observation for ten months, when the difficulties still continued.

Examples of fracture of the internal table alone have never occurred in the practice of the author; but he refers to the unrivalled collection of this form of injury contained in the army medical museum at Washington, and takes occasion to remark of the latter that it constitutes the richest and most instructive cabinet of specimens of gunshot injuries in the world. The diagnosis of fractures of the base of the skull, a class of injuries invariably fatal, receives a brief notice, the most reliable sign being the escape of cephalo-spinal fluid from the ear, which will, however, only occur when the petrous portion of the temporal bone is fractured.

In concluding our analysis of this able and highly original chapter, we must remark that we do not remember ever to have read a work based more exclusively upon personal observations. It is to be regretted that Dr. Neudörfer has not entered more fully into a consideration of the secondary effects of gunshot injuries of the head; and, although we find much that is open to fair criticism, we shall content ourselves with contrasting his simple mode of managing these lesions with that advised by Dr. Macleod, who says:—

> "To multiply cases would be of little use. The teaching of all was to lead us to wait; to purge the patient thoroughly; to remove only such pieces of bone as could be got at with the forceps, and which were quite detached and loose; to bleed, if need be, locally and even generally; to use cold applications when there was a fear of inflammation; to enjoin perfect rest, not only to the body generally, but, if possible, to the special senses also, by isolating the patient, and thus removing the stimuli to their exercise; to enforce the lowest diet, and to continue all this treatment for a long period, even after all danger seemed past; and, finally, to treat any incidental complications on general principles."

The above extract is not only expressive of the opinions of a single individual, but may be regarded as embracing the views of the majority of surgeons. A perusal of the writings of Stromeyer, Demme, or any of the prominent authors, civil or military, on gunshot injuries of the head, followed by an examination of the chapter of Dr. Neudörfer, is apt to give rise to the most conflicting views, and to leave the impression that the chances of life are quite as good when no treatment has been adopted, as when the patient has received the most careful attention.

There is probably no operation in the whole range of surgery, which has given rise to so much discussion, as that of *trephining* in complicated injuries of the skull, and upon the value and indications of which the opinions of surgeons are less settled. At the present day there seems to be an impulse to limit the procedure to a very few cases, and even to decry it altogether; but we find, however, that it was resorted to in our late war in about 10 per cent. of the instances of gunshot fracture of the cranium. An examination of the works which are placed at the head of this article shows how differently their authors estimate its propriety and indications. Thus, Neudörfer and Stromeyer are opposed to it in every case, the former pursuing an expectant treatment, the latter a strictly antiphlogistic course. Mr. Pirogoff, on the other hand, says:—

> "If all the symptoms of compression are mild, thus diminishing the probabilities of contusion of the brain; if operative measures for the extraction of foreign bodies and splinters of bone present no particular difficulties; and if extravasated blood be present under the fragments of bone, then should tre-

phining be practised, in order to elevate depressed bone, remove balls and loose spicula, and afford free exit to the collection of blood; but incisions into the dura mater, and interference with adherent pieces of bone, must be avoided. Regarding trephining merely as an oncotomy, I resort to it immediately if I recognize the presence of pus."

M. Légouest concludes that,

"The operation is demanded *primarily* (1), when balls are impacted in the bones of the skull, or have passed into the interior of that cavity; (2), when the bones are extensively depressed, with wound of the integuments; (3), when immediate symptoms of compression, as coma, partial paralysis, and hemiplegia, attend a depression, without lesion of the integuments: that, *secondarily*, the indications are (1), the persistence, or gradual increase of febrile delirium, convulsions, symptoms of congestion, and inflammation of the brain, after the primary accidents, less marked than under the preceding circumstances, have been treated in vain by general measures. The operation must always be performed when the bones are changed in their texture and colour, since it is then highly probable that pus or blood is effused between the dura mater and skull, or that the internal table is the seat of the fracture. (2). The existence of symptoms which indicate that encephalitis has terminated in suppuration."

Dr. Williamson advocates the use of the trephine when urgent signs of compression are due to the presence of blood between the bones and dura mater, from a ruptured meningeal artery, and when there is an effusion of pus in the same situation, and its presence is pointed to by local and constitutional signs. In regard to fractures with marked depression, he would only operate when the symptoms of compression are very urgent.

Dr. Demme justifies opening the skull for the purpose of extracting projectiles and splinters of bone, and for affording exit to pus situated between the dura mater and bones, particularly if the latter be dead. In these cases, however, he would not employ the trephine, as he regards the osteotome of Heine as a better instrument.

Mr. Macleod's views are very similar to those of M. Légouest, and are expressed by the subjoined extract:—

"*Primarily*, operative interference (under which term is included the use of the trephine, saw, or elevator) in gunshot wounds of the head should never be had recourse to, except (1) in cases of fracture with great depression—cases in which the bone is forced deeply into the brain, especially if it is turned so that a point or an edge is driven into the cerebral mass; or (2) unless we clearly make out the impaction of spiculæ, balls, or other foreign substances in the brain, which cannot be removed through the wound by means of forceps: that, *secondarily*, the cases which call for operation are (1) those in which a foreign body is at this period discovered irritating the brain, and which cannot be extracted without a piece of the bone being removed; or (2) those in which signs of compression, set in after a well-marked rigor, continue to increase in intensity, notwithstanding treatment, and have lasted for some time."

Staff-surgeon Matthew would restrict trephining to those cases in which there is reason to believe that pointed splinters press upon the brain or its membranes, when it should be resorted to at once, even if no symptoms be present.

It is thus to be remarked, that the trephine is employed by surgeons of known experience and high reputation, for widely different lesions and symptoms. With one, its results having been invariably fatal, it is positively contraindicated under all circumstances. With another, the results have been so favourable that its application is not restricted to a limited number of lesions; so that we think their conclusions must be received with much caution. There is not a single position assumed by any of the above authors which cannot be greatly shaken, or entirely overthrown, by the adduction of pertinent cases. Thus, we could relate two cases of trephining for fracture, with rupture of the middle meningeal artery, both of which were fatal; and, on the other hand, we could give the particulars of six examples of gunshot injuries of the cranium, in which the bone was either merely grooved, fissured, or contused, which were followed by limited necrosis and the presence of pus between the dura mater and the skull. All of our patients recovered without any operative interference whatever, with the exception of the removal of the sequestra, by means of forceps, where they were perfectly loose. In one of these cases we extracted a portion of the left parietal bone nearly as large as the palm of the hand, several months after the reception of the injury, and the pus could be seen to issue from the fissure at each pulsation of the brain. We met with no fatal cases of this description; but, notwithstanding these facts, we would not deem ourselves justified in declaring that the trephine should not be applied for the relief of compression of the brain from effused blood, or to give exit to pus underlying necrosed bone. And yet we consider that we have more reason to take this position than has Neudörfer, for example, who decries the operation in cases of foreign bodies impinging on the brain or driven into its substance. He supports his views by the narration of a few cases of recovery; but let it be observed, he does not give us the proportion of deaths to that of cures in his mode of treatment; while we met with no deaths when the bone was necrosed and pus was present between it and the dura mater. We regard, therefore, his observations, as well as those of other authors who treat the subject in the same manner, as of little importance when applied to actual practice; and while, on the one hand, we deprecate the efforts of those surgeons who by their writings and teachings inculcate the doctrine that the trephine should never be resorted to in gunshot fractures of the skull, and, on the other hand, equally condemn its indiscriminate application, we hold that cases will arise in which the trephine is positively demanded, and, that if very decided indications be present, the surgeon should be held culpable who withholds it.

A careful examination of the fatal cases of trephining cannot fail to strike any one with the fact that in many instances the extent of the injury alone, which called for operative interference, was sufficient to give rise to the unfavourable result, as a post-mortem examination of almost all of those cases shows extensive contusion of the brain, or the various stages of inflammation, of which softening and abscess are the most frequent. In many of these injuries, therefore, the effects produced by the injury upon the central nervous system were of themselves mortal, and the operation was not called for; in others it was performed too late to be of any avail; so that those circumstances should be taken into consideration in estimating its dangers. We are fully convinced, from personal observations and from a careful examination of the whole subject, that trephining is not more dangerous than simple removal of fragments, the use of Hey's saw, or elevation of depressed bone, and our conclusion is almost verified by a comparison of these operations, the difference in their results not being material. Thus, trephining was resorted to in the army and navy, during our late war, 111 times, with 62 deaths; in the British army in the Crimea, 28 times, with 21 deaths; and in Schleswig-Holstein, 2 times, with 1 death; thus affording 141 cases, with 84 deaths, or a mortality rate of 59.57 per cent. On the other hand, operative measures, not including the trephine, were resorted to in the United States army in 114 instances, of which 61 died; in the British army, 8 times, with 5 deaths;

and in Schleswig-Holstein, by Langenbeck and Stromeyer, 4 times, all being fatal. Of 126 cases, therefore, 70, or 55.55 per cent., were fatal. In the great majority of the latter cases, removal of the comminuted bone was effected by means of the forceps, thus showing that the mortality was due to the concomitant injury inflicted upon the brain. Had the trephine been employed in these instances, it would probably have been regarded as the cause of the fatal issues.

The mortality of trephining in army practice, we have found, may be placed at 60.62 per cent., our calculation having been based upon 160 cases, of which 97 were fatal. Of this number, 107, with 60 deaths, occurred in the U. S. army; 4, with 2 deaths, in the U. S. navy; 28, with 21 deaths, in the British army in the Crimea; 2, of which 1 was fatal, in Schleswig-Holstein; 5, with 2 deaths, in Italy, 1859; 4 in India, all of which were fatal; and 10 in the practice of Mr. Pirogoff, with 7 deaths. If this result be contrasted with that obtained in civil practice, it will be found that the mortality is in favour of the latter by 7.85 per cent., since of 252 cases that we have collected, 133, or 52.77 per cent., were fatal.

Such are the bare statements that we have gathered from the works before us, in regard to trephining; but to draw any conclusions as to the real value of this operation, as well as of other operative procedures, a comparison must be made between the cases of serious gunshot injuries of the skull which have been treated by conservative measures, and those in which operative interference was deemed necessary. The following table shows the comparative advantages of operative and non-operative treatment, and it also indicates that the former is attended with much better results than the latter, the percentage in its favour being 17.03 per cent.; 127 of the cases were trephined, and in 126, the fragments were either simply removed by the forceps, depressed bone was elevated, or Hey's saw was employed, the proportion of the latter instances being very small. It should also be remarked that of the cases treated conservatively, those occurring to the British and Schleswig-Holstein surgeons were subjected to strict antiphlogistic measures, while in the American cases they were not regarded as essential; the mortality in favour of the antiphlogistic treatment being 32.84 per cent.; a result which speaks more for Stromeyer's practice, and against that of Neudörfer, than all theoretical arguments that could be adduced. It may also be of interest to note that operative measures have been more successful in army than in civil practice, since we have found that of 129 cases of elevation and trephining in London and American hospitals, 85, or 65.88 per cent., were fatal, thus affording a percentage of 8.57 in favour of the former.

Mode of treatment.	Where observed.	Number.	Recovered.	Died.	Per ct. of mortality.
1. Conservative measures	U. S. Army . . .	483	99	384	79.50
	Schleswig-Holstein .	40	34	6	15.00
	British Army, Crimea	50	14	36	72.00
		573	147	426	74.34
2. Operative treatment	U. S. Army . . .	221	100	121	54.75
	Schleswig-Holstein .	6	1	5	83.33
	British Army, Crimea	26	7	19	73.03
		253	108	145	57.31

In the concluding our notice of gunshot injuries of the skull and brain, we take occasion to narrate an interesting example of wound of the *cerebellum*, which fell under our observation after the battle of Shiloh, on the 8th of April, 1862, and which we have hitherto never published. It presents some peculiar features; and we have been unable to find a similar case on record.

A private soldier of the 23d Louisiana Regiment, C. S. A., 28 years of age, was struck on the 6th of April by a buckshot, which penetrated the occipital bone a little below and to the right of the external occipital protuberance. He made himself known to us at the expiration of forty-eight hours after the reception of the injury, when he asked us to take charge of some vouchers, which he had in his possession. His manner was perfectly rational, and he informed us that he had been wounded in the back of his head. We found a small, round opening, which would not admit the tip of the little finger, but as he complained of no pain in the head, nor suffered from special symptoms, and as we were overburdened with work, we made no further examination. We were, however, struck by the fact that his thumbs were adducted and strongly flexed in the palms, and he told us that he suffered from persistent priapism, which we found to be the case. There were no other general symptoms; the man had a good appetite, was continually walking about, and, in spite of the rain, could not be induced to wear his hat, or stay in his tent. We saw him again on the afternoon of the following day, when the symptoms had undergone no change whatever; after which we lost sight of him and supposed he had wandered off; but on the morning of the 11th, in making our rounds among the many hundreds of wounded under our charge, we found him in his tent dead, and in the supine position. The calvaria having been removed, the somewhat misshapen buckshot was seen to be in contact with the corpus dentatum of the right lateral hemisphere of the cerebellum. A small splinter of bone was lying in the track of the wound, and the morbid appearances were confined to slight ecchymosis of the cerebellum, and a small quantity of bloody serum at the base of that organ.

Gunshot Injuries of the Joints.—Gunshot wounds of the larger joints are sufficiently common in war to constitute a class of cases of the greatest interest to the surgeon, since they are usually regarded as demanding early operative interference. All military surgeons are convinced that any measure for the relief of these injuries affords little hope for recovery, the majority proving fatal from exhaustion or pyæmia; but the important question as regards the proper treatment of these cases, is far from being decided, the greater number of medical officers, however, inclining to resection, as affording the best chances of life. With the view of determining the exact value of the different modes of treatment, and comparing their several advantages, we shall examine, somewhat in detail, the statistics of these lesions, as they relate to the hip, knee, ankle, shoulder, elbow, and wrist-joints; and include all the remarks we have to offer upon joint amputations and resections.

The *hip-joint* is supposed, from its protected situation, to be little liable to penetrating gunshot wounds; but the records of different campaigns show that such is not the case. Impaction of balls in the head and neck of the femur, with only partial fracture, are even not very rare; but the most common injuries are those in which the neck or head of the bone is shattered, with involvement of the acetabulum or the parts in its vicinity, or with fracture of the great trochanter and shaft of the femur. The diagnosis of these lesions is not always easy; and this is especially the case with gunshot fractures of the neck of the femur, as the deep position of the joint does not permit ready access of the finger. Moreover, as was first pointed out by Stromeyer, the usual signs of intra-capsular fracture, as shortening, impossibility of moving the limb, and eversion of the foot, are often absent; and it may be even that the patient retains considerable power over the motions of the limb. Pirogoff, Stromeyer, Demme, Esmarch, and other eminent military writers, state that they have met with such marked cases, and that the true nature of the injury was only known after the occurrence of suppuration and the discharge of splinters of bone, when it was too late to resort to operative measures, on account of pyæmic symptoms having declared themselves. As a rule, the most trustworthy signs of the accident are extensive swelling occurring rapidly, excessive pain on motion, the formation of abscesses, and the escape of splinters of bone. The case of a zouave, wounded in the Crimea, and referred to by Légouest, is an excellent illustration of the obscurity of the symptoms and the difficulty of recognizing a serious injury of the hip-joint. A ball had entered the groin, but for ten days the man walked about, and refused to have the wound examined. After death, a complete fracture of the cotyloid cavity was discovered.

The primary dangers of these injuries are not very great, but if the patient survives the shock, he is very liable to be carried off by pyæmia or exhaustion. A ball impacted in the head or neck of the femur is apt to be followed by tetanus, caries, or abscess of the joint, necessitating amputation or excision. In the army medical museum at Netley, England, there is a preparation, described by Dr. Williamson, in which an old matchlock ball is firmly lodged in the head of the femur. The missile entered opposite to the great trochanter, and passed through the brim of the acetabulum. Death occurred from tetanus in three weeks, when the orifice of the wound had closed. The capsular ligament formed the sac of an abscess, which contained a considerable quantity of pus and splinters of bone. These cases do not, however, always terminate fatally, as is well exemplified by the instance of an officer, narrated by Larrey, in whom a ball remained imbedded in the neck of the femur for twenty years, where it was discovered after death from chest disease. Fractures of the head or neck of the bone and of the trochanter, with fissure extending into the articulation, will be followed by inflammation and profuse suppuration, and, if left to nature, are very apt to terminate fatally from osteophlebitis and pyæmia, erysipelas, or exhaustion. These cases are, therefore, generally considered as imperatively calling for an immediate operation, and the question lies between excision and amputation at the joint.

Excision of the hip-joint may be required for impaction of a ball in the head or neck of the femur, fracture of the head and neck, or fracture of the trochanter extending into the articulation. These may be regarded as favourable indications for the operation, particularly if the soft parts be little injured. If, however, in addition to these lesions, the femoral vessels be implicated, the case is not one for excision. Macleod and Légouest consider that when the shaft of the femur is split below the great trochanter, excision is hardly admissible; and the reports of several fatal cases would seem to confirm their views. In Seutin's case, six inches of the bone were removed, and the patient died of gangrene on the ninth day. In Schwartz's secondary case, the bone was sawn off to within two inches below the small trochanter, and death ensued from pyæmia on the seventh day. Oppenheim removed the bone as low down as the small trochanter, and his patient perished on the nineteenth day.

Three successful results, obtained during our late war, however, prove conclusively that the operation may be practised, be it justifiable or not, even when several inches of the shaft of the femur are involved. As these cases are interesting, and demonstrate the amount of usefulness of the limb after the procedure, we subjoin a brief abstract of each.

CASE I. Joseph Brown, U. S. A., was wounded at the second battle of Bull Run, by a musket-ball which passed through the left trochanter. On two occasions fragments of bone were removed; and early in March, 1863, the limb began to swell immoderately, the discharge became scanty and fetid, much callus had been thrown out, and pus had burrowed amid the muscles of the thigh. Surgeon D. P. Smith, U. S. V., on the 21st of March, made a large exploratory incision from three inches above to five inches below the trochanter; the femur was divided squarely by powerful bone-cutting forceps, *six inches below the trochanter;* the neck of the femur was so much diseased that the head of the bone was then removed. The specimen shows that nature had attempted something in the way of reparation. For the first few days the limb was supported by the anterior splint of Professor Smith, and subsequently by a kind of hammock. The diet was nourishing and stimulating; and the large cavity of the wound was frequently washed out through a catheter, maintained in the wound as a drainage tube. In less than four months he had entirely recovered. The patient describes his condition in the following extract from a letter written to Dr. Otis, on the 26th of September, 1865:—

"My leg is improving slowly; the knee remains quite stiff yet, but I think it is better than it was one year ago. I have some control over the movements of the thigh. When standing, can move the leg backwards and forwards, about two and a half feet, and sideways enough to bring the foot across in front of the other foot. Can bear considerable of my weight upon it, but not enough to do away with the use of one crutch yet. Cannot perceive that there is any difference in the length of the limb since I was discharged, as I use the stirrup in the crutch the same as then." He walked about and attended to his business, and complained of no pain about the hip. (Case X. pp. 66 and 75, Circular No. 6. S. G. O.)

CASE II. Lieut. Jarratt (C. S. A.) was wounded by a conical musket-ball, which shattered the upper extremity of his left thigh-bone. On the 19th of May, 1864, Surgeon J. B. Reed (C. S. A.) removed the head and neck of the bone, together with both trochanters and several inches of the shaft of the femur. At the end of six weeks, the patient had so far recovered that he was able to be removed from Richmond, Va., to his home in North Carolina. In September, 1864, the sinuses had all closed, and considerable weight could be borne on the injured limb. Ultimately, he could walk without crutches, with the aid of a cane and a high-heeled boot. (*Idem.* Case XIV. p. 66.)

CASE III. Hugh Wright, U. S. A., was struck, at the wilderness, Va., May 5th, 1864, by a minié ball, which shattered the neck of the femur and great trochanter. On the 22d day after the reception of the injury, when an abscess had formed about the seat of the fracture, Asst. Surg. G. A. Mursick, U. S. A., resected the head and neck of the femur along with both trochanters. On the 6th of May, 1865, he left the hospital at Newark, N. J., when his general health was tolerably good, but the limb was disposed to abscesses upon any unusual exertion. (*Idem.* Case XVI. p. 68.)

Previous to the late war in the United States, only thirteen cases of excision of the head of the femur for gunshot injury were on record. The operators were Oppenheim, in the expedition of the Russains against the Turks, in 1829; Seutin, at the siege of Antwerp, 1832; Schwartz and Ross, in the Schleswig-Holstein war of 1848–1849; Ried, after the battle of Friedericia, 1848;[1] Macleod, O'Leary, Hyde, Blenkins, Combe, and Crerar, in the Crimea, 1855; Textor, the elder, in 1847, and Baum, in 1854, for gunshot wounds out of the field. Of these operations, the primary case of O'Leary, in which five inches of bone in all, including the head, were removed, was the only one followed by success. The mortality of European operations may, therefore, be placed at 92.30 per cent.

---

[1] Demme's Table, p. 256. No other military surgeon refers to this case.

The table of excisions of the head of the femur, collected by Surgeon Otis, shows that thirty-two operations were performed by American surgeons during the late war. We, however, exclude two cases, as in one the result is uncertain, and in the other it is conclusively shown that the head of the bone was not removed. The operators were Gouley, Thurston, Billings, Bartholow, Pineo, Clements, Bill, Smith, Dubois, Hewit, Reed (C. S. A)., Thompson, Mursick, Mulford, Bontecou, Thomson, Reams, White, Wagner, Bliss, Allen, McMahon, Norris, and Griswold. Of these thirty cases, three recovered, namely, those of Smith, Reed, and Mursick, abstracts of which are given above; and in all of these, the injuries were of such a nature that Macleod and Légouest would have considered them as unfit cases for the operation. The mortality of American operations is, therefore, exactly 90 per cent.

We thus find that of 43 excisions of the hip-joint for gunshot injury, 4 were successful, and 39 were fatal, thus affording a mortality of 90.69 per cent. Death followed in 18 from exhaustion, in 5 from pyæmia, in 3 from secondary hemorrhage, in 1 from internal bleeding, in 1 from gangrene, in 1 from acute peritonitis, in 1 from colliquative diarrhœa, in 1 from cholera, and in 8 from an unknown cause. As far as can be ascertained, 9 operations were primary, with 8 deaths, and 25 were secondary, with 23 deaths; and in 9 the precise date of the operation is uncertain, but of these 8 were fatal. The results of the operation may, therefore, be thus expressed:—

	Per cent.
Mortality of all excisions of the head of the femur, . . .	90.69
" primary " " " . . .	88.88
" secondary " " " . . .	92.00

Amputation at the hip-joint for gunshot injuries is to be resorted to in those cases only in which wound of the femoral vessels complicates fracture of the upper end of the thigh-bone, or when great destruction of the soft parts is associated with injury to the bone. As a rule, disarticulation has been performed for comminuted fractures of the upper third of the shaft of the femur, for osteomyelitis, consequent upon gunshot injury, and when the thigh has been carried away by a large projectile so close to the trunk that amputation at or through the trochanter is not practicable. For uncomplicated gunshot fractures of the hip-joint, we find that disarticulation has been practised but seldom, only two such cases having occurred out of the twenty-three amputations reported to the Surgeon General of the U. S. Army, up to November, 1865.

The following table, which has been prepared with great care, and embraces far more cases than any that has hitherto appeared, shows the mortality of the operation for gunshot injuries:—

Table showing the Results of Amputations at the Hip-Joint for Gunshot Injuries.

Where Observed, and Authorities.	Recovered.	Died.	Total.
Larrey's Primary Cases. Clinique Chirurgicale, t. v. . .	...	6	6
Larrey's Secondary Case. Idem	1	...	1
Guthrie's Cuidad Rodrigo Case. (Secondary). Circular 6, S. G. O.	...	1	1
Guthrie's Waterloo Case. (Secondary). Williamson's Military Surgery, p. 201	1	...	1
S. Cooper's Primary Case. Dictionary, p. 85	...	1	1

Where Observed, and Authorities.	Recovered.	Died.	Total.
Blandin's Cases (1794–95). Demme, p. 254, and Circular 6, S. G. O.	1	3	4
Hutin's Primary Cases. Légouest, p. 699	...	2	2
English Surgeon after the battle of Aboukir, 1798. Demme	1	...	1
Bryce, at Athens, 1827. Idem	1	...	1
Baudens, Africa, 1836. Idem. (Secondary.)	1	...	1
Brownrigg, at Elvas, 1811. Circular 6, S. G. O. (Secondary.)	...	1	1
Wedemeyer's Secondary Cases. Légouest, p. 700	...	2	2
Letulle, at Siege of Antwerp, 1833. Idem. (Primary.)	...	1	1
Clot-Bey, Marseilles, 1830. Idem. (Secondary.)	...	1	1
Sédillot's Primary Cases. Légouest, p. 699	...	5	5
Jubiot's Primary Cases. Idem	...	3	3
Guyon's Primary Case, Algeria, 1840. Idem	...	1	1
Sedillot's Secondary Case, at Val de Grace, 1840. Demme	1	...	1
Richet's Primary Case, Paris Revolution of 1848. Légouest	...	1	1
Robert's, Guersant's, and Vidal's Secondary Cases. Idem	...	3	3
Schleswig-Holstein Cases, 1848–50. Stromeyer, p. 533	1	6	7
Isnard, at Brescia, 1859. (Secondary.) Demme	1	...	1
Italian Hospitals, 1859. Idem	...	4	4
Bertherand, at Novara, Italy, 1859. Circular 6, S. G. O.	...	1	1
Arland, at the St. Mandrièr's Hospital, Toulon, 1859. (Secondary.) Demme	1	...	1
Jules Roux, at the St. Mandrièr's Hospital, Toulon, 1859. (Secondary.) Demme	4	2	6
Neudörfer, at St. Spirito's Hospital, Verona, 1859. (Secondary.) Demme	1	...	1
Fayrer's Primary Case. Clinical Surgery in India, p. 630	...	1	1
Sikh War in India, 1848–49. Williamson, p. 202. (Primary.)	...	3	3
Roux's Primary Case. Plaies d'Armes a Feu. Communications faites à l'Acad. Nat. de Méd. Paris, 1849, p. 38	...	1	1
Baudens' Primary Case. Idem, p. 222	...	1	1
Bertherand's Secondary Case. Campagnes de Kabylie, p. 238	...	1	1
Gilgencrantz's Secondary Case. Idem, p. 145	...	1	1
Pirogoff. Grundzüge der Allg. Kriegschirurgie, p. 1137	...	8	8
British Cases, Crimea (10 Primary, 4 Secondary) Official Report	...	14	14
Twelve Primary Cases, French Army, Crimea. Légouest	...	12	12
Mounier's Secondary Cases at Constantinople. Macleod	...	3	3
Légouest's Secondary Case (really recovered from operation). Idem	...	1	1
Four other Secondary Cases in the French Crimean Hospitals. Circular 6, S. G. O.	...	4	4
Primary Cases in the late American War. Idem	2	7	9
[1]Secondary Cases in the late American War. Idem	2	12	14
Cases in the U. S. Navy during the late War. Horwitz	...	2	2
Dr. Morton's Case. (Secondary.) Amer. Jour. Med. Sciences, Oct. 1866	1	...	1
Dr. Agnew's Case. (Secondary.) Idem	...	1	1
Dr. Forbes' Case. (Secondary.) Idem	...	1	1
	20	117	137

From the foregoing statement it is to be observed, that of 137 hip-joint disarticulations for gunshot, 20 recovered, and 117 died, thus affording a percentage of mortality of 85.40, or 5.29 per cent. less than that of resection of the head of the femur. 56 operations were primary, with 2 recoveries; 52 were secondary with 14 recoveries; and of the remaining 29 cases the time of operation could not be ascertained, but of these 4 were cures. The results of the operation may, therefore, be thus expressed:—

---

[1] Professor Eve, of Nashville, has collected 13 secondary cases that occurred in the Confederate Army; and Dr. Otis has the particulars of eight additional instances; but they are not included in the table, as we are not aware of their results.

	Per cent.
Mortality of amputations at the hip-joint	85.40
Mortality of primary amputations at the hip-joint	96.42
Mortality of secondary amputations at the hip-joint	73.07

The *conservative*, or expectant plan of treatment, of gunshot injuries of the hip-joint has found but little favour with military surgeons; but if it be determined to make an attempt to save the limb, strict local antiphlogistic remedies will be required. The leading indications are to support the strength of the patient, which is liable to be rapidly exhausted by profuse suppurations; the free and early evacuation of abscesses, or of pus forming within the joint, or burrowing beneath the fascia lata; perfect rest of the joint and limb, and the removal of foreign bodies, as balls, and portions of clothing and splinters of bone. In regard to the extraction of loose or partially adherent splinters of bone, immediately after the reception of the wound, or after suppurative action has set in, the practice is opposed by Esmarch, Jobert, and Stromeyer; but Roux, Légouest, Bégin, Baudens, Pirogoff, Demme, Beck, Simon, Niese, Schwartz, and the majority of prominent army surgeons, on the other hand, favour it. The question as to the proper position of the limb remains undecided. Demme states that in the Italian hospitals, in the war of 1859, extension was almost exclusively employed. Stromeyer and the majority of surgeons recommend the double-inclined plane; but Pirogoff observed twenty cases of recovery, in which no apparatus was employed; and he, moreover, advises that no attempts should be made to reduce the fracture or remedy the shortening, in the early stages of the treatment.

Those surgeons who pointedly condemn all efforts to save the limb after gunshot fracture of the surgical or anatomical neck of the thigh-bone, exercise, in our judgment, but little discrimination, when they declare, as does the surgical historian of the late American war, that "experience has demonstrated the uniform fatality of gunshot fractures of the head or neck of the femur when abandoned to the resources of nature." No statement can be farther from the truth; and we are satisfied that the reports of Demme and Pirogoff, particularly, on this point, have been overlooked. The number of recoveries is not very large, and, unfortunately, we have no means of comparing the results of the expectant plan of treatment with those of amputation and excision. That it is by no means uniformly fatal, is well shown by the following facts, which include all that we have been able to collect.

Demme met with two cases of recovery, in Italy, in patients who were wounded at Magenta. In both the ball had struck near the great trochanter. In the first case, at an early period, the man suffered great pain, the parts about the joint were much swollen, and the entire limb was œdematous. In the second week, a piece of the acetabulum, with its incrusting cartilage, was extracted. An abscess formed under Poupart's ligament, for which deep incisions were practised. In the fourth and fifth weeks, several spicula were discharged, and the patient was attacked with chills, which created fears of pyæmia. The swelling, pain, and suppuration, however, diminished, healthy granulations formed, and at the expiration of five months he was nearly well. There was partial anchylosis, he could bear his weight upon the limb, and there were still two small fistulous openings. The limb was shortened to the extent of only one centimetre. Dr. Demme did not see the patient after this period, but he heard later that the man had returned to his home. (*Specielle Chirurgie der Schusswunden*, p. 252.)

In the second case, after the lapse of a few days, the shattered ball and two long spicula were extracted, with the effect of producing unmistakable signs of fracture of the neck of the femur, the diagnosis of which was confirmed by the escape of pus and synovial fluid. The structures about the joint were painfully swollen, and an abscess external to the tensor vaginæ femoris was opened. Other deep-seated collections of pus discharged themselves spontaneously; the man suffered greatly, and the question of disarticulation was often broached. Recovery, however, gradually took place, under a strict local antiphlogistic treatment. At the end of nine months, the limb was shortened a centimetre and a half, the joint was completely anchylosed, and there was slight discharge of pus from several fistulous openings. (*Idem*, p. 253.)

The elder Larrey mentions the case of an officer who was struck, in Egypt, by a ball, which entered the neck of the femur. He recovered from the injury, but died twenty years subsequently of disease of the chest, when the ball was found to be impacted in the neck of the bone. We believe that the specimen of bony anchylosis of the hip-joint, with superficial impactment of a somewhat misshapen ball in the neck of the femur, deposited in the museum of Val-de-Grace, and of which Légouest gives an engraving, refers to this very case, as it is remarked of the specimen that it was presented to Larrey by Seutin, and that was taken from the body of a soldier of the army of Egypt, dead at Brussels, who had been wounded at Saint-Jean-d'Acre. (Macleod and Légouest, p. 648.)

Hyrtl, in 1848, treated a national guardsman, in whom the neck of the femur had been shattered by a musket-ball. Several loose splinters were extracted. The suppuration was so profuse that his life was despaired of; but, notwithstanding this, he was cured at the expiration of thirteen months, walked with the assistance of crutches, and was living in 1861. (*Handb. d. Topog. Anat.*, 4 Aufl. II. 1860, p. 498, and Demme, p. 252.)

Pirogoff, in his inspections of Russian military hospitals, has met with not less than twenty cases of unquestionable injury of the hip-joint by projectiles of war, in which conservative treatment was successful. In more than one-half of these cases, the joint was opened from the direction of the great trochanter or inguinal region, and the majority were fractures of the surgical neck of the femur, or of the trochanter and anatomical neck. In many, an early correct diagnosis was out of the question; but consecutive symptoms, as profuse suppuration, extrusion of spicula, shortening of the limb, and the formation of callus, clearly indicated the nature of the lesion. The cases progressed under the most unfavourable circumstances: the wounded patients were not isolated; they had been transported some distance; the means of transportation were not adapted to the injuries; and they had been intrusted to the care of medical officers who had not the slightest conception of the severity of the wounds. (*Grundz. d. Allg. Kriegschirurgie*, p. 814.)

Légouest has witnessed six cases of fracture of the neck of the femur in which neither amputation nor resection were resorted to, and of these three recovered. (Pirogoff, p. 814.) Professor Hamilton relates a case where a gunshot fracture of the neck of the bone was followed by recovery, with shortening to the extent of one and a half inch. (*Treatise on Mil. Surgery*, New York, 1865.) And Dr. Miles has reported two instances of cure with bony union, the shortening in one being one inch and a half, and in the other three-quarters of an inch. (*Amer. Med. Times*, July 11, 1863.)

The most remarkable case of all, however, is that which occurred to Brandish, in which the entire head of the femur exfoliated in consequence of a gunshot wound, and the patient recovered. (Demme, p. 252; Lohmeyer, p. 199; and Pirogoff, p. 815.)

A résumé of the foregoing facts indicates that thirty-one gunshot fractures of the neck of the thigh-bone, complicated, in one case, by fracture of the acetabulum, and, in one, by impaction of a ball in the neck of the bone, recovered under conservative measures; results which show conclusively that attempts to save the limb, after such injuries, are far from being hopeless.

Pirogoff is the only military surgeon, so far as we know, who strenuously advocates the adoption of conservative measures in the class of cases under consideration. He does not favour disarticulation nor early resection, for the simple reason that an accurate diagnosis of fracture of the neck of the femur, immediately after the reception of the injury, is not easy. He, therefore, prefers to treat all these cases on an expectant, conservative plan, in the first instance; resorting subsequently to resection, if it should be deemed advisable; and in this practice he is sustained by Neudörfer, Stromeyer, Légouest, and Larrey.

Having now adduced all the reported facts bearing upon the different modes of managing gunshot fractures of the hip-joint, it next devolves upon us to examine the *comparative advantages of amputation, excision, and conservative measures*, and throw all possible light upon the very important question, Which means affords the *best chance of saving life?* The majority of army surgeons are very decidedly in favour of primary excision; but it is to be borne in mind that their opinions are based mainly upon the results obtained from amputation and excision at the hip in the Crimean and Schleswig-Holstein wars. In those campaigns, the head of the femur was resected eight times, and one case recovered; disarticulation at the hip was performed forty-one times, and all the cases, save one, were fatal. Macleod says that nearly all of the amputated cases "died miserably, very shortly after the operation; all those, on the other hand, on whom excision was practised, lived in comparative comfort, all without pain, for a considerable time." Excision, therefore, holds out to Macleod, Stromeyer, Larrey, Esmarch, and Légouest, the best chance of preserving life, and, although the results of the operation are very unfavourable, they express the opinion that it is superior to amputation, leaving its exact value to be determined by future campaigns.

Previous to 1859, the opinion that exsection was preferable to disarticulation, was correct, but the extended experience gained in the Italian war of that year, and in the late war in the United States, has thrown much additional light upon these operations, and effected a very material change in their results. The statistics of these wars, combined with those of former campaigns, show that the mortality of hip-joint amputations has been much reduced, whereas no change whatever has been effected in the fatality of resections of the joint. Thus, 137 amputations were followed by 117 deaths, a mortality of 85.40 per cent.; 43 excisions were fatal in 39 instances, being a mortality of 90.69 per cent. These results show that the best chance of saving life is upwards of 5 per cent. in favour of amputation at the joint. The mortality of primary excisions was 88.88 per cent.; of secondary excisions 92.00 per cent. Primary amputations were fatal in 96.42 per cent. of the cases; and secondary amputations show a mortality of only 73.07 per cent. Regarding, then, the operative treatment of gunshot fractures of the hip-joint, from a statistical point of view, the chance of saving life is manifestly on the side of secondary amputation, the mortality of the operation being 15.81 per cent. less than that of primary excision; 19.93 per cent. less than that of secondary excision, and 23.35 per cent. less than that of primary amputation.

It will be seen that we have considered these operations merely as affording chances for life, disregarding altogether the preservation of the limb. We agree with Macleod that "the objection so often advanced to the operation, that the limb resulting from excision is useless, even if true, has nothing to do with the matter. The only point worthy of discussion is, which operation holds out the best chance of preserving life?" The answer has already been anticipated. The results derived from secondary amputation are so conclusive, that we do not hesitate to express our preference for that procedure. At the same time, we would not have it understood that we entirely condemn excision. The statistics of the operation do not include a sufficient number of cases, upon which to base definite conclusions. It may be that a careful selection of cases in future campaigns will do much to determine the real merits of the operation; but we have here to deal with recorded facts, not hypotheses. So far as the experience of our own late war enables us to form a decided opinion, the results are so discouraging that it really becomes an important question whether the procedure is entitled to a place in military surgery. We cannot imagine that, at any future time, patients will be placed under more favourable conditions for recovery, than they were in our military hospitals, in which the operations and after-treatment were conducted. Those institutions were models in their way; they possessed every conceivable comfort and appliance, and the patients received the utmost care and attention from the hands of able surgeons. Yet, notwithstanding all these advantages in their favour, the mortality of excision of the head of the femur was 10 per cent. greater than that of amputation at the hip-joint. We, therefore, lean to the opinion that the operation should be discarded from army surgical practice.

Those surgeons who adhere to resection, urge in its favour, that the primary dangers are much less than those of disarticulation; in other words, that the shock of the operation is not nearly so great, and that the loss of blood is trifling. Now, we regard these objections to disarticulation as trivial and ill-founded. The shock of either operation scarcely deserves mention, provided chloroform be used; and it is very certain that the mortality after amputation at the hip has greatly diminished since the introduction of anæsthetic agents. The abdominal tourniquet for compressing the aorta, so successfully used in Philadelphia, and recommended by Mr. Lister, of Glasgow, or, in its absence, compression over the aorta with the closed fist, the intestines having previously been emptied, guards so effectually against any considerable hemorrhage, that we have seen the operation executed with the loss of less than three ounces of blood.

The secondary dangers of amputation are, in our judgment, not so much to be apprehended as those of excision. In either case death may ensue from blood-poisoning, or from exhaustion, the result of profuse suppuration; but, in amputation, since there is no section of bone involved, the dangers of osteophlebitis and pyæmia are not nearly so great. Then, again, we do not see, after disarticulation, those extensive burrowings of pus among the muscles of the thigh, which prove a source of so much annoyance and danger after excision; and we are by no means to disregard that, in the after-treatment, the management of a stump is much more simple than that of an excised hip-joint. Indeed, after excision, perfect rest and fixation of the parts are the principal indications of treatment; and the great, sometimes insurmountable, difficulties to be encountered in those respects, can only be fully appreciated by those surgeons who have had the management of such cases.

Although, as we have pointed out, conservative, expectant measures have saved both life and limb in a certain number of cases, yet, unfortunately, there are not sufficient data to enable us to arrive at any well-founded conclusions as to the general applicability of this mode of treatment. The most complete facts, from which a comparison can be drawn as to the merits of conservative measures, when compared with amputation and excision, are to be found at page 31 of Circular No. 6, Surgeon-general's office. Of 82 terminated cases of gunshot fracture of the upper extremity of the femur, in which the hip-joint was implicated, 2 were amputated at the joint, and died; 12 were resected, and 10 died; 68 underwent conservative measures, and all terminated fatally.

An impartial examination of all the facts bearing upon gunshot fractures of the hip-joint, warrants the conclusion that conservative measures should be resorted to in the first place; and, in the event of their failure, secondary amputation holds out the best chances of life.

The following table exhibits the comparative advantages of the different modes of treating gunshot fractures of the hip-joint.

Mode of treatment.	Authority.	Where observed.	Number.	Recoveries.	Deaths.	Per cent. of mortality
1. Conservative measures	Otis	U. S. Army . . .	68	...	68	...
	Légouest	French Army, Crimea	17	7	10	...
	Stromeyer	Schleswig-Holstein .	5	...	5	...
			90	7	83	92.22
2. Excision of the head of the femur	...	...	43	4	39	90.69
3. Amputation at the hip-joint	...	...	137	20	117	85.40

Penetrating gunshot wounds of the *knee-joint*, with or without involvement of the bones, have always been classed among the most fatal of injuries; and their dangers are greater the smaller the size of the opening. If the articulation be penetrated by a bullet, the small aperture does not admit of the ready extraction of splinters of bone or foreign bodies, morbid secretions do not obtain free exit, suppuration and rapid destruction of the joint set in, and death or loss of the limb will follow. Recoveries from these lesions are, however, sometimes met with. Of the British troops who served in the Crimea, two were cured with stiff joints, in whom the capsule was unmistakably opened. In the case of an officer the joint was penetrated, and the ball grooved the tibia. A number of cures after penetrating wounds were recorded during our late war. In one instance, the details of which are given by Dr. Otis, a conoidal ball perforated the articulation, and grooved the inner condyle. There was a large deposit of new bone, and the patella was firmly united to the femur. One recovery with anchylosis occurred in the U. S. Navy, a pistol-ball having penetrated the joint, "involved" the internal condyle, and lodged in the head of the tibia. Professor Gross has met with a case in which a pistol ball penetrated the knee-joint, and was imbedded in the articular extremity of the femur, followed by an excellent recovery. These rare cases confirm the observation of Alcock that "if a ball do not absolutely project within the articulation, or if the foreign body be smooth, and not project much beyond the articulating surface, the limb may be saved." Finally, Stromeyer reports three remarkable instances of perforating gunshot wounds of the knee-joint, which occurred at the battle of Idstedt, terminating in recovery without suppuration or anchylosis.

Shell wounds, on the other hand, by which the joint is widely opened, are presumed to be less fatal than injuries by balls, since they permit of the easy extraction of foreign bodies and the ready escape of pus. Of these lesions, Mr. Macleod remarks :—

> "Shell wounds of the knee are, as a whole, not so dangerous as bullet wounds. They frequently merely cut the soft parts open; or if they injure the bone, the larger aperture which they leave acts beneficially in permitting the free discharge of secretions. I have known many shell wounds in the neighborhood of the joint, and not a few in which the articulation was opened and even the bones injured, ultimately do well, so far as saving the limb goes; more or less anchylosis following."

Dr. Neudörfer alludes to three cases of recovery which confirm the views of Mr. Macleod. In all the articulation was widely opened transversely, and the patients objected to operative interference. In one case tolerably free motion was preserved.

The diagnosis of intracapsular fracture of the bones entering into the formation of the knee-joint is generally easy when the missile has entered laterally or anteriorly; but if the ball has penetrated the joint from the popliteal region, the symptoms are often obscure, and the recognition of the fracture more difficult. Conoidal musket-balls perforating or fracturing the femur above the condyles, may produce fissures which extend into the articulation, as is well exemplified by specimens 76 and 4071 in the museum at Washington. In such cases the diagnosis is impossible; but experience has taught us, Stromeyer remarks, that if the ball has struck the femur a little more than three inches above the upper border of the patella, at which point the capsular ligament ceases, fissures of the articular extremity are produced very seldom. Gunshot wounds of the tibia are more liable to be followed by fissures involving the joint, than similar lesions of the femur. Demme met with a number of cases in Italy in which the head of the tibia was apparently fractured external to the capsule; but suppuration of the articulation indicated that fissuring had taken place. A preparation in the possession of Stromeyer demonstrates that the same result may be produced by partial fracture at some distance from the joint. A grazing ball struck the tibia just below the tuberosity, and furrowed the bone to the depth of half an inch. The symptoms were not those of serious injury, but at the expiration of three weeks acute suppuration called for amputation, when a fissure extending into the articulation was discovered. The following instructive case also bears upon the point under consideration :—

> "A man of the 71st regiment was accidentally shot in the street of Balaklava by a small revolver bullet. The missile had imbedded itself in the tibia just below its tuberosity, whence it was easily turned out by a pointed instrument after a small incision had laid the site open. The knee-joint did not appear to have been involved, but the man died eight days afterwards from the effects of acute inflammation of it and the accompanying sympathetic fever. On examination after death, a minute fissure was found to have extended through the head of the tibia into the joint."

Jobert in his work entitled *Plaies d'Armes a Feu,* narrates an instance of recovery from gunshot wound of the knee-joint in which the capsule was penetrated, and the femur fractured; and Dr. Walter F. Atlee has recorded in July (1867) No. of this Journal a case of cure after the removal of a pistol-ball from the articular surface of the tibia. Guthrie, Macleod, Stromeyer, Pirogoff, Esmarch, Légouest, and the majority of military surgeons, however, have never seen a single example of cure when the joint was distinctly opened, and one or more of the bones much injured by the ball. The experience of the Schleswig-Holstein, Crimean, and Italian campaigns, and the late war in the United States, confirm the long-established maxim that "all gunshot injuries of the knee-joint in which the epiphysis of the femur or tibia has been affected, demand immediate amputation of the thigh." The exceptions to this rule are so rare that few surgeons would think of managing such lesions without resorting to primary amputation or excision. The experience of the Russian surgeons in the Crimea in the treatment of these wounds was most unfortunate. Pirogoff says:—

> "The results of gunshot injuries of the knee-joint, in spite of their great variety, were nearly always identical, death after and without amputation. From complete shattering of the epiphysis to the merest grooving of the condyles, with and without impaction of the ball, wounds of the knee were always fatal; and simple penetrations of the capsule terminated almost as badly. In despair, I abstained finally from exploring the wounds with my finger. I did not advise amputation, but passively listened to the persuasions of other surgeons, and left it to the patient to decide his own fate. I have no reason to reproach myself with not having tried excision of the joint."

Fractures of the *patella* with opening of the articulation appear to form an exception to the general rule of mortality of gunshot injuries of the knee-joint, and offered some hope of preserving the limb. Hennen relates two cases of recovery in officers, in both of whom the treatment was rigidly antiphlogistic. From one he abstracted from time to time nearly fifteen pounds of blood. Esmarch and Simon have each seen an instance of recovery from a shattered patella. Macleod has reported a case of cure of comminution of the patella, the greater portion of the bone, as well as spicula of the femur, having been removed in the course of the treatment. Demme has recorded two recoveries in his hospital practice in Italy; and in the museum at Netley, specimens 2943 and 2944, removed from a soldier who died at Fort Pitt of an enormous abscess of the liver, demonstrate bony anchylosis of the knee-joint following a gunshot wound by a ball which entered the articulation posteriorly, passed directly forwards, and comminuted the patella. The man was wounded in India, and survived the injury upwards of two years. Finally, in the anatomical museum of the University of Zurich there is a remarkable specimen, referred to by Pirogoff, in which a ball had made a clean perforation without splintering, through the centre of the patella and articular extremity of the femur, and the man recovered with a stiff joint. All of the above nine cases terminated in anchylosis.

Excision of the knee has not been regarded by army surgeons with the same favour that has been extended to it by civil operators. Adelmann would reject it altogether. Demme considers it as not being adapted to a campaign in the field. Neither Stromeyer nor Pirogoff has practised the operation, as they think it holds out little encouragement even under the most favourable circumstances. Légouest writes:—

> "However much we desire to deceive ourselves, we doubt whether resection of the knee will ever be substituted in a general way for amputation of the thigh in military surgery. Amputation is so serious a procedure, and the mutilation which it effects so deplorable, that we would not hesitate to renounce it for resection under favourable circumstances, that is, when the patient is growing and approaching manhood; when he does not have to be transported; when he can be isolated in a healthy locality, and surrounded by all the requisite hygienic and surgical resources. Unfortunately, the impossibility of meeting with these conditions will probably abolish resection of the knee from army surgery."

Dr. Macleod, also, has little hope of the general introduction of the operation into army practice, as he says :—

> "Admiring as I do the brave attempts which have been made in civil practice to save limbs by excising the knee, I regret that it should not also be extended to military practice; but except in rare circumstances, I fear that it cannot be accomplished, from the careful after-treatment, and the long period of convalescence necessary to effect a cure. * * * That nice adaptation, however, of the surfaces, that accurate fixture of the limb, the careful attention, nourishment, and perfect repose which such cases obtain in a civil hospital, and which have so much to do with the result, can hardly be attained in the field."

Prior to the late war in the United States there were on record, so far as we know, only eleven instances of excision of the knee-joint for gunshot injury. Four of the cases were examples of complete excision, and the operators were Lakin, in the Crimea, 1855; Neudörfer, at Verona, 1859, two cases; and Hutchinson, at the London Hospital, 1861. The operation of Mr. Hutchinson was immediate. A charge of small shot, No. 6, had passed through the right knee, utterly shattering the condyles. Three inches of the femur, the entire patella, and a very thin slice of the articular extremity of the tibia were excised. Acute tetanus set in on the eighth day, and death followed in fifty-two hours.[1] In the case of Mr. Lakin, the patella was also removed, and the man died of exhaustion. The operations of Neudörfer terminated fatally. Six cases were instances of partial excision. The elder Textor removed the lower end of the femur, in 1847; Fahle performed the same operation, in the Schleswig-Holstein war of 1849; Knorre excised two inches and a half of the tibia and fibula, at Hamburg, in 1849, for shattering of the former bone by a bullet; and the entire patella has been excised by Theden, Percy, and Laurent. Of these operations, the primary case of Knorre, and those of Percy and Laurent, were followed by recovery. Verneuil met with a cure after excision of the joint, but Légouest does not inform us of the extent of the operation. Of eleven complete and partial excisions of the knee occurring in European practice, therefore, four recovered, and seven died, the mortality being 63.63 per cent.

During our late war the knee-joint was excised by American surgeons seventeen times. Eleven were examples of complete excision, the operators having been Bontecou, two cases; Bently, two cases; Heller, Hinkle, Homans, Rush, and Thorne; the names of the surgeons in the remaining two instances being unknown. Of these cases only two recovered. The mortality of American operations was, therefore, 81.81 per cent.; whereas complete excisions in European practice show a mortality of 100.00 per cent. Of partial excisions there were six instances. The entire patella was removed by Bontecou, Mosely, and Coale, and all the patients died. Surgeon Lidell removed fragments of a patella, and the man lived ten days. In two cases portions of the head of the tibia were excised, followed by recovery. Of seventeen complete and partial excisions, four recovered and thirteen died, the ratio of mortality being 76.50 per cent.

We thus find that of 28 excisions of the knee-joint for gunshot injury, 8 recovered, and 20 died, the mortality after the operation being 71.42 per cent. Death followed in 4 from pyæmia, in 4 from exhaustion, in 1 from tetanus, and in 11 from an unknown cause. Of 15 complete excisions, 2 recovered and 13 died. Five of these operations were primary, with 4 deaths, and 10 were secondary, with 9 deaths. The results of excisions of the knee-joint may, therefore, be thus expressed :—

---

[1] London Lancet, April 20, 1861, p. 38[illegible].

	Per cent.
Mortality of complete and partial excisions of the knee-joint . .	71.42
" " " primary " " " . .	80.00
" " " secondary " " " . .	90.00

It will be perceived that the mortality from this operation is enormous. In civil practice, however, the number of deaths is far less than from amputation of the thigh. Of 179 cases of total excision for disease, tabulated by Heyfelder, 125 recovered and 54 died, the ratio of mortality being 30.67 per cent. Subsequent amputation was resorted to in 13 cases; and in only 16 of the recoveries was there no anchylosis.

Amputation at the knee has usually been resorted to for complicated fractures of the shafts of the bones of the leg; but the operation can be extended to those cases of gunshot injury of the knee-joint in which the articular extremity of the tibia is involved, or even when the lower epiphysis of the femur is slightly fractured, since in the latter event the removal of the condyles may be practised, a procedure, indeed, preferred by some surgeons, as it gives the stump a better shape. If the soft parts be much injured, the operation is not admissible; but we do not consider that the small aperture made by a bullet is any contra-indication to it. In one instance we disarticulated at the knee for comminution of the head of the tibia by a conoidal ball, which had penetrated the joint a little to the left of the patella ; but we do not know the ultimate fate of the patient, as he was under our care only a few days. In such a case the aperture in the anterior flap may be beneficial in permitting the free escape of discharges.

Petit, Sabatier, Richter, Baudens, Macleod, Neudörfer, and Demme, prefer amputation at the knee to removal of the thigh, as they think it has succeeded more often than the latter operation. Pirogoff, Beck, and Légouest, on the other hand, condemn it. The two operations performed by the Russian surgeon were fatal ; and of 78 cases which occurred in the French army in the Crimea, only 7 recovered, the mortality having been 91.02 per cent. The cases collected by Günther, 84 in number, show 46 recoveries and 38 deaths, the ratio of mortality being 45.23 per cent.

The following table, exhibiting the results obtained in army practice, does not, however, afford nearly so favourable statistics.

Table showing the Mortality by Amputations at the Knee-Joint for Gunshot Injury.

Where performed and authority.		Cases.	Recoveries.	Deaths.	Per cent. of mortality.	Remarks.
U. S. Army.	Otis	116	52	64	55.17	49 primary, 17 deaths ; 67 secondary, 47 "
French " Crimea.	Légouest	78	7	71	91.02	3 primary, recovered ; 5 secondary, fatal.
British " "	Matthew	7	3	4	57.14	6 primary, 3 deaths ; 1 secondary, fatal.
Russian" "	Pirogoff	2	...	2	100.00	
Italian war.	Demme	2	...	2	100.00	
		205	62	143	69.75	

It is thus to be perceived that of 205 amputations at the knee for gunshot injury, 62 recovered, and 143 died, the percentage of mortality being 69.75. So far as can be ascertained, 58 of these operations were primary, and of these, 20, or 34.48 per cent. were fatal; 73 were secondary, with 53 deaths, or a mortality of 72.60 per cent. These results show that the procedure is eminently adapted to field surgery, as the mortality is 38.12 per cent. in favour of primary operation. If, however, we compare the results of disarticulation at the knee with those of amputation of the thigh in its lower third, we will find, contrary to the generally received opinion, that they are in favour of the latter by 14.67 per cent. Thus, in our table showing the results of the different modes of treating gunshot fractures of the femur, there are recorded 236 amputations in the lower third of the thigh, of which 130 were fatal, the mortality being 55.08 per cent.; while, as we have indicated above, in 205 amputations at the knee, there were 143 deaths, or a mortality of 69.75 per cent.

Amputation of the thigh is justly regarded as one of the most deplorable of all operations, and no surgeon considers it his duty to perform it except as a final resort. The mortality of the operation in army and naval surgery has varied from fifty to one hundred per cent. in different campaigns. During our late war it was 64.43 per cent. for the army, and 52.08 per cent. for the navy. These results may be thus contrasted with those obtained in other wars: British Army, Crimea, 62.24; British Naval Brigade, Crimea, 65.0; French Army, Crimea, 92.0; Schleswig-Holstein, 60.15; Italy, 1859, 74.47; Danish Army, Schleswig-Holstein, Djorup, 56.7;[1] Indian Campaign, 48.7; Waterloo, 70.2; Spain, Alcock, 62.0; Campagne Constantine, 1837, Sédillot, 87.5; Africa, Baudens, 51.4, Polish Campaigns, Malgaigne, 100.0; Mexican War, 100.0; Hôtel-Dieu, 1830, 81.8; and cases communicated to the Paris Academy of Medicine, 1848, 77.2.

The majority of military surgeons are agreed that the proper time for operating is as soon as possible after the patient has recovered from the shock of the injury; but Pirogoff is a hot opponent of primary thigh amputations, and says that they were far more fatal in the Russian army in the Crimea than secondary operations. In the British and French Crimean armies, on the other hand, the mortality of secondary amputations was much greater than that of primary amputations; and we can only account for these different results, by supposing that the laws of hygiene were, of necessity, less strictly complied with by the besieged Russians than by the opposing allies. In the United States army, the Franco-Sardinian army of 1859, and the Indian and African campaigns, primary amputations were more successful than secondary operations, so that the statements of Pirogoff, which are not founded on an available statistical basis, do not invalidate the rule to amputate as early as possible after the infliction of the injury.

In the following table, the results of amputations of the thigh in military practice are exhibited, and a distinction is drawn between the mortality of primary and secondary operations, as far as it was found possible to do so.

---

[1] This, and the remaining results are from the computations of Macleod.

Table showing the Mortality of Amputations of the Thigh for Gunshot Injury.

Where observed and authority.		Cases.	Recoveries.	Deaths	Per cent. of mortality.	MORTALITY PER CT. OF	
						Primary.	Secondary
U. S. Army.	Otis	1597	568	1029	64.43	54.13	74.76
U. S. Navy.	Horwitz	48	23	25	52.08	...	...
British Army, Crimea.	Matthew	241	91	150	62.24	53.68	80.35
French " "	Légouest	1678	134	1544	92.02	60.00	84.74
Schleswig-Holstein.	Stromeyer	128	51	77	60.15	...	...
Italian war.	Demme	431	110	321	74.47	...	...
		4123	977	3146	76.30	...	...

It is thus to be seen that of 4123 amputations of the thigh for gunshot injury, 977 recovered, and 3146 died, the percentage of mortality being 76.30. The figures of the mortality of primary and secondary amputations refer to 1448 cases, of which 695 were primary, and 753 secondary operations In the United States army there were 423 primary cases, with 229 deaths, and 638 secondary, with 477 deaths. In the British army, of 177 primary amputations, 25 were fatal, and of 56 secondary cases, 45 were fatal. In the French army there were 95 primary cases, with 57 deaths, and 59 secondary, with 50 deaths. Of these, according to Macleod, Mounier treated 46 at the Dolma Batchi Hospital, at Constantinople; 21 were primary, with 8 cures, and 25 were secondary, and all fatal. Baudens[1] reports 108 of the cases as having been treated at the Gulhané Hospital in the same city. Of these, 74 cases were primary, with 44 deaths, and 34 were secondary, with 25 deaths.

We, therefore, find that of 695 primary amputations of the thigh for gunshot injury, 314 recovered, and 381 died, the mortality being 54.82 per cent.; whereas of 753 secondary amputations, only 181 recovered, and 572 died, the percentage of mortality being 75.96, or 21.14 per cent. greater than that of primary operations. These results are very different from those heretofore obtained, and, based as they are upon 1448 cases, settle the question of primary or secondary amputation.

In the *conservative* treatment of penetrating gunshot wounds of the knee the indications are the same as in the case of the hip-joint. To guard against the lighting up of destructive inflammation, perfect rest and fixture of the articulation must be maintained, and evaporating lotions will be found useful. When inflammatory action has been established, strict antiphlogistic remedies, both local and general, must be vigorously resorted to. Of the former, tincture of iodine, and the repeated application of leeches, aided by intermittent digital compression of the femoral artery, but, above all, the early and energetic use of ice, are the measures most worthy of confidence. Poultices and warm water-dressings are to be avoided. The internal administration of antimonials was highly thought of by the British surgeons in the Crimea. When suppuration has been established within the joint, free incisions with division of the lateral ligaments, first practised by Petit, and recommended by Stromeyer, Macleod, and Demme, will afford great relief, but, although the results of this practice are encouraging, it is questionable whether they effect much towards saving life. The records of the U. S. Army contain a large number of fatal cases treated by free incision, and in Nos. xlvi. and xlix. of this Journal, may be found eight fatal examples of this treatment, occurring in the practice of Surgeon Lidell, and Dr. Bellanger. The only successful case with which we are acquainted is that of Private Carroll, reported in the *Medical and Surgical History of the British Army in the Crimea.*

---

[1] La Guerre de Crimée. Paris, 1858 pp. 325 and 326.

In cases where the joint is open, and the structures are in a state of chronic inflammation, and indisposed to heal, Dr. Larghi, of Vercelli, we are informed by Demme, is in the habit of touching the synovial membrane with nitrate of silver, with happy results. The ulcerated cartilage rapidly takes on healthy action, and the separation of dead tissues is much accelerated; but the chief aim to be obtained from this remedy is adhesive inflammation of the synovial membrane. The elder Demme succeeded in effecting numerous cures, under the same circumstances, by the use of tincture of iodine, either dropped into the joint, or pencilled over its articular surfaces. This practice was imitated by Dr. Siebold during our late war. A free incision was made into a knee-joint disorganized by inflammation following a gunshot fracture; the semilunar cartilages and fragments of the head of the tibia and patella removed, the cartilage of the condyles was scraped off, and the synovial membrane was painted with tincture of iodine. The man survived twelve days.

A large number of so-called recoveries from penetrating gunshot wounds of the knee-joint has been recorded, but they will not withstand the test of rigid examination. In the following table, showing the results of the different modes of treating these injuries, in which the articulation had been penetrated, and in many cases the bones involved, and from which the comparative advantages of conservative measures, excision, and amputation can be appreciated at a glance, there can be no doubt that the joint was opened. In the cases occurring in the U. S. army, it is impossible to separate the instances of mere penetration from those complicated with fracture; but of the recoveries Dr. Otis remarks, that they were, with six or eight exceptions, examples of fractured patella. The U. S. navy cases were all fractures. In twenty-one of the Italian cases the capsule was merely opened, and in eighteen, the bones were involved. The Schleswig-Holstein cases were all examples of fracture. Of the Indian cases, Mr. Macleod says: "The knee was penetrated, but the injury apparently so slight as to lead the attendants to try to save the limb." In none of the recoveries among the British troops in the Crimea, did the bone within the capsule appear to have been more than grazed, not broken.

An inspection of the table will show that the wars in Italy and the United States have confirmed the experience of previous campaigns in the treatment of these injuries. The results prove conclusively, from a statistical point of view, that excision of the joint cannot be substituted for removal of the thigh in its lower third, the latter procedure, indeed, having been attended with better results than any other mode of treatment. The management of penetrating gunshot wounds of the knee by conservative measures holds out so little encouragement, particularly in the absence of information in regard to the usefulness of the limb in the instances of recovery, that it scarcely deserves imitation. We, ourselves, have always practised amputation in these cases, and have never met with a case of recovery in which it was not resorted to.

Table showing the Results obtained from the Different Modes of Treating Penetrating Gunshot Wounds of the Knee-Joint.

Mode of treatment.	Authority.	Where observed.	Number.	Recoveries.	Deaths.	Per cent. of mortality.
1. Conservative measures	Otis	U. S. Army . . .	308	50	258	83.76
	Horwitz	U. S. Navy[1] . . .	22	12	10	45.45
	Demme	Italian hospitals, '59	39	10	29	74.35
	Stromeyer	Schleswig-Holstein .	24	5	19	79.16
	Macleod	India	9	...	9	100.00
	Matthew	British Army, Crimea	14	8	6	35.71
			416	85	331	79.56
2. Complete excision of the knee-joint	Preceding table	...	15	2	13	86.86
Partial excision	...	...	13	6	7	53.84
			28	8	20	71.42
3. Amputation at the lower third of the thigh	See subsequent tab.	...	236	106	130	55.08
4. Amputation at the knee	Preceding table	...	205	62	143	69.75

Gunshot fractures of the *ankle-joint* pursue a very similar course to analogous injuries of the wrist-joint. Demme remarks that balls have remained harmlessly impacted in the lower epiphysis of the tibia; but we can find no record of these cases. The following table shows that conservative measures offer the best chance of life, after which rank amputation at the joint, amputation of the leg, and excision.

---

[1] These figures differ from those contained in Dr. Horwitz's report; but that gentleman has informed the reviewer that a mistake has been committed in making up the statistics of gunshot fractures of the knee-joint and patella, and corrected the data as we now give them.

Table showing the Results of the Different Modes of Treating Gunshot Fractures of the Ankle-Joint.

Mode of treatment.	Authority.	Where observed.	Number.	Recovered.	Died.	Per cent. of mortality.
1. Conservative measures	Demme	Italian hospitals, '59	17	14	3	17.64
	Stromeyer	Schleswig-Holstein wars	21	16	5	23.80
			38	30	8	21.05
2. Excision of the ankle-joint	Otis	U. S. Army . . .	10	4	6	...
	Légouest	Traité, etc., p. 749 .	1	1	...	...
			11	5	6	54.54
3. Amputation at the ankle-joint	Otis	U. S. Army . . .	67	58	9	13.43
	Horwitz	U. S. Navy . . .	2	2	...	...
	Stromeyer	Schleswig-Holstein .	4	2	2	50.00
	Légouest	French Army, Crimea	37	18	19	51.35
	Matthew	British Army, Crimea	13	11	2	15.38
	Demme	Italy, 1859 . . .	3	3	...	...
			126	94	32	25.39
4. Amputation of the leg	Otis	U. S. Army . . .	2348	1737	611	26.02
	Horwitz	U. S. Navy . . .	38	26	12	31.57
	Stromeyer	Schleswig-Holstein .	46	28	18	39.13
	Légouest	French Army, Crimea	781	353	428	54.80
	Matthew	British Army, Crimea	146	95	51	34.92
	Demme	Italy, 1859 . . .	113	69	44	38.93
			3472	2308	1164	33.52

The *conservative* treatment of these fractures does not differ from that of fractures of the wrist, the patient recovering with an anchylosed joint. We remember, however, two cases of fracture of the internal malleolus by bullets, in which we succeeded in saving the articulation, and in both there was pretty free motion. The treatment is tedious in more severe cases; the patient suffers much pain, and we have more than once been requested to remove the foot under such circumstances. Of this mode of treatment, Pirogoff says:—

"Simple perforation of the ankle-joint, of course, demands conservative measures; but the extensive resort to expectant-conservative treatment is not advisable, since partial removal of the several parts of the foot, and even supra-malleolar amputation, upon the whole, do not give bad results. They, moreover, possess the advantage of not keeping the patient in the hospital for so long a time. In wounds about the foot the circumstances of treatment differ very greatly from those of the hand. In the latter cases, the patient can walk about; in good weather, he is enabled to pass the day in the open air, and every portion of the preserved hand may become useful. On the other hand, in gunshot wounds of the foot, the patient is bedridden for six months or a year, and when he has recovered, the foot is so crippled that he has to resort to crutches. On these grounds I have, as a rule, preferred amputation of the foot, and, when called for, supra-malleolar amputation, to a purely conservative treatment."

The above extract, we believe, expresses the opinions of the majority of military surgeons on this subject, and, although the small mortality—21.05

per cent.—certainly speaks well for conservative measures, yet, the number of cases is too small, and their exact nature too uncertain, to enable us to draw very definite conclusions as to the merits of this mode of treatment.

Excision of the ankle-joint, in military practice, is a rare procedure; many operations having been reported as such, which were merely excisions of the tarsal bones. Of the American cases, included in our table, 8 were excisions of the tibio-tarsal articulation, that is, 7 were excisions of the articular surfaces of the tibia, fibula, and astragalus, and 1 of the tibia and astragalus. 5 of these cases were fatal. The two remaining cases were partial excisions; in one, the external malleolus, entire astragalus, and portion of the scaphoid bone, were removed; in the other, portions of the astragalus and calcaneum were excised. The latter case was fatal. One case of complete excision of the astragalus and calcaneum is not included in the table, as the result had not been determined, although there was a prospect of a useful limb, two months after the operation. The operation of Legouest was limited to the external malleolus. Of 11 excisions of the ankle-joint, 5 patients recovered and 6 died, the mortality being 54.54 per cent. These results are very discouraging; and the statistics of the operation in civil practice are not at all gratifying. The operation should, therefore, be excluded from army surgery, amputation at the joint, if practicable, being substituted for it, or amputation above the malleoli, in those cases which do not admit of disarticulation at the joint.

Amputation at the ankle-joint has been performed for gunshot injuries 126 times. Of this number, 94 recovered, and 32 died, the mortality being 25.39 per cent., or about 8 per cent. less than that of amputation of the leg. The majority of cases contained in our table were performed according to the method of Syme; the operation of Pirogoff having been practised in comparatively few cases. In regard to the latter procedure, we must say that we do not think it has met with the consideration that its great merits demand, a fact which may be due to the reports that Pirogoff himself had abandoned it. That eminent surgeon, however, expresses his great surprise that such rumors should be current, and denies the truth of all such statements. British and American surgeons appear to have given the preference to Syme's operation. French surgeons practise either Roux's or Syme's method; but the Russian, German, and Swiss surgeons are very decidedly in favour of Pirogoff's amputation.

We have seen a number of excellent and useful stumps, after Pirogoff's operation, in army practice, and we agree with Langenbeck, Demme, and Neudörfer, that it is by far the best of all amputations at the ankle-joint. Neudörfer remarks that the bones usually unite rapidly, and he has never seen union with suppuration of the bones. In a series of very valuable contributions to the *London Lancet*, during the summer of 1866, on amputations about the foot and ankle, Professor Hancock refers to several instances in civil practice, in which union had taken place in three weeks; and in a patient of Mr. Croft, the remnant of the calcaneum and tibia had united in twelve days. Of 58 cases, collected by Mr. Hancock, performed by British surgeons for disease and accident, only 5 were fatal, and 5 suffered secondary amputation. The result of 3 cases was not known, but the remaining 45 terminated favourably, with good and useful stumps. We are also informed by the same author, that, of British operators, Erichsen, Paget, Busk, Croft, Partridge, Henry Smith, and Wood, express a decided opinion as to the superiority of the operation over that of Syme.

It is to be regretted that Mr. Pirogoff has not kept an accurate record of the operations performed by Russian surgeons in army practice. He reckons from his list of amputations, performed during the first six months of the siege of Sebastopol, about 60 cases. During his tours of inspection, he met with 17 additional cases in various hospitals, all of which were doing well. At Simpheropol he saw two patients going about on crutches, in both of whom the operation had been performed on both sides. His list shows but 7 deaths, the majority of which occurred after secondary operations.

Amputation of the leg, as our table indicates, has been performed in army practice 3472 times. 2308 patients recovered, and 1164 died, the mortality having been 33.52 per cent. We are unable to give the results of the operation in the different segments of the limb.

The *shoulder-joint,* from its superficial position, is very open to gunshot injuries; and, from the exposed situation of the left shoulder in firing, as pointed out by Otis, the injuries are most frequent on that side. In penetrating wounds requiring excision, it may be accepted, as a rule, that the head of the humerus alone will be found to be injured, although the coracoid and acromion processes, the glenoid cavity, and the neck of the scapula, or the shaft of the humerus may, at the same time, be involved in the fracture. In non-penetrating wounds, also, very severe injury may be inflicted, as in the case narrated by Larrey, in which a round-shot passed across the shoulder, merely abraded the skin, but shattered the head of the humerus, the acromial end of the clavicle, and the coracoid and acromion processes.

The diagnosis of gunshot fractures of the joint is generally easy. They are less threatening to life than similar injuries of the elbow or knee; and, although abscesses are to be feared, yet the suppurative process is more delayed, and all the symptoms of inflammation are less severe than in fractures of the elbow or knee-joints. The prognosis of these wounds is, therefore, fortunately favourable, even if the extent of the injury be not accurately ascertained, and even if the patients be neglected, since secondary excisions are not to be so much feared as in the case of wounds of other large joints.

Excision of the shoulder-joint is a most admirable operation; the different steps of its performance are simple; and its results are most gratifying. The operation was formerly restricted, and more particularly by Larrey and Guthrie, to those cases in which the head of the bone alone was involved; but, at the present day, fractures of the shaft of the humerus, below the insertion of the deltoid muscle, which Guthrie considered to be the very lowest point at which the bone could be divided with any hopes for success, are not regarded as contra-indicating the operation. During our late war, Surgeon Bliss, U. S. V., removed the head and upper half of the shaft of the humerus, and the patient recovered with a very useful arm. Other American surgeons excised the head, with five and six inches of the shaft of the bone, with excellent results. Esmarch, Stromeyer, Langenbeck, Thiersch, and Baudens have also removed from four to five inches of the shaft, with the head of the bone, with equally happy recoveries. These cases demonstrate that the opinions of Larrey and Guthrie, that such injuries should be subjected to amputation at the shoulder, are erroneous; and also show that the fact pointed out by Stromeyer, that in gunshot fracture of the upper part of the shaft of the humerus, the fissures do not extend into the head of the bone, in consequence of which "resection of the head of the humerus should not be lightly entered upon," has had little effect in determining the propriety of those operations.

Impaction of a ball in the spongy structure of the head of the bone is an indication for the operation. Although a ball may become encysted in this situation and be productive of no evil consequences, yet, if permitted to remain, it will be almost certain to set up caries or osteomyelitis, and death will ensue. A case narrated by Demme (p. 220) affords a good example of the bad effects occasioned by not removing the ball, or rather balls, since one ball had lodged in the head of the bone, and one was impacted in the surgical neck of the humerus. After the expiration of four weeks, during which period the presence of the missiles had not been suspected, the ball occupying the head of the bone was extracted. The soft parts were extensively swollen almost to the elbow, and were very painful. Abscesses had formed underneath the latissimus dorsi and pectoralis major muscles; there were four fistulous openings, and there was much constitutional disturbance. Seven weeks after the reception of the injury, resection was resorted to. The head of the bone was carious and an osteophyte had sprung from its inner aspect. A second ball was seen lying at the bottom of a carious cavity in the surgical neck of the bone. There had been no comminution; but the upper half of the humerus was in an advanced stage of osteomyelitis. Death followed from pyæmia on the tenth day after the operation.

Notwithstanding the fact that these cases usually demand early operative interference, the reaction will not, as a rule, be so great as in the preceding instance; and a ball may even remain incapsulated in the head of the humerus, without being productive of disease of the bone. H. Larrey has reported such a case, the ball having remained in a cavity in the head of the humerus for thirty-six years. We would here naturally look for anchylosis of the joint; but Simon has narrated an exceptional instance, in which a ball remained in the head of the humerus for many years, with preservation of the mobility of the joint.

The following table shows the number and mortality of cases of excision of the shoulder-joint for gunshot injuries, as well as the mortality of primary and secondary operations. In twenty-nine of the American cases, in addition to the head of the humerus, portions of the clavicle, or of the coracoid and acromion processes and neck of the scapula, were excised, with but four deaths; the result being as satisfactory as that of ordinary removal of the head of the bone. Fortunate results, in similar cases, have likewise been obtained by Langenbeck, Mayer, Baudens, Larrey, and Velpeau. In one instance the issue was remarkable. Of this case, Otis says that "after an excision of the head and upper third of the humerus, the remainder of the bone became necrosed, and was excised, together with the articular ends of the radius and ulna, and yet a limb was preserved, which, with the aid of ingenious apparatus, is very useful."

Table exhibiting the Results of Cases of Excision of the Shoulder-Joint for Gunshot Injury.

Where performed and authority.		Recovered.	Died.	Total.	Per cent. of mortality.	Primary.	Deaths.	Per cent. of mortality.	Secondary.	Deaths.	Per cent. of mortality.
U. S. Army.	Otis	343	165	508	32.48	210	50	23.80	298	115	38.59
French, Crimea.	Légonest	17	21	38	55.26	..	..	..	..	..	..
British, "	Matthew	13	3	16	18.75	10	2	20.00	6	1	16.66
Principalities.	Bandens	8	5	13	38.46	..	..	..	..	..	..
Algerian wars.	"	13	1	14	7.13	..	..	..	..	..	..
Schleswig-Holstein.	Stromeyer	12	7	19	36.84	6	2	33.33	13	5	39.23
Italian war, 1859.	Demme	17	9	26	34 61	..	..	..	..	..	..
Constantinople.	Légonest	..	..	..	..	6	4	66.66	..	..	..
		423	211	634	33.28	232	58	25.00	317	121	38.17

We thus find that of 634 excisions of the shoulder-joint for gunshot injuries, 423 patients recovered and 211 died, the percentage of mortality being 33.28. Of 232 primary excisions, 174 were successful, and 58, or 25 per cent., died; whereas of 317 secondary excisions, 196 recovered, and 121, or 38.17 per cent., died; a ratio in favour of primary excision of 13.17 per cent.

Although some surgeons, Pirogoff amongst others, incline to secondary operation, the majority are in favour of early excision, and they are supported in their views by the statistics of the operation. Early secondary or intermediate operations are to be avoided. If primary excision be not practised, operative interference should be delayed until suppuration has become fully established. The influence exerted on the result by the length of the interval between the injury and operation is well exemplified in the cases occurring in the Schleswig-Holstein wars. Esmarch says of these cases, "Of 6 performed in the first twenty-four hours, but two were fatal. In the stage of commencing suppuration, hence in that of the highest inflammation, on the third or fourth day, 3 resections were performed; of these, 2 proved fatal. Secondary operations, that is, after the full occurrence of suppuration, were effected 10 times, with fatal result in 3 cases; which is somewhat more favourable than in primary resection."

The method of operating usually adopted was that by the single straight incision. It admits of ready access to the joint, and gives most excellent results. The incision of Stromeyer, by preventing burrowing of pus and permitting more rapid and free escape of effused fluids, materially diminishes the risk of one of the great dangers after the operation, and very much facilitates recovery. In this operation the joint is opened posteriorly by a crescent-shaped incision carried backwards and downwards for about three inches from beneath the acromion. Stromeyer urgently recommends this operation, in which, as he states, the preservation of the long head of the biceps is somewhat more difficult, but is still practicable. In regard to the long head of the biceps, the preservation of which is particularly insisted upon by Langenbeck, we agree with Demme, Esmarch, and Légouest, that it is a point of no special importance, since in the cases in which it has been divided, torn across by a ball, or sloughed, the motions of the limb were not impaired.

Although the chief danger after excision of the shoulder-joint is the formation of abscesses and sinuses, yet it must be remembered that secondary hemorrhage may be the cause of a fatal result. Such a case was met with by Demme in Italy. Four weeks after the decapitation of the humerus, a very profuse hemorrhage occurred, which was arrested by plugging, ice, and compression of the subclavian artery. Subsequently the bleeding recurred, and carried off the patient. Of the 7 fatal Schleswig-Holstein cases Esmarch remarks that in 5, before death, active hemorrhage set in, caused by venous obstruction, and was not to be arrested by ligation of the artery, as was shown by one case, in which the axillary and subclavian vessels were successively tied.

Amputation at the shoulder-joint, it must be said to the credit of American, Italian, and German surgeons, was resorted to in fewer cases than excision in the late war in the United States, the Italian war, and the Schleswig-Holstein wars. On the other hand, in the Crimea, with the French, English, and Russian surgeons, amputation was the rule, excision the exception. It is only in complicated cases of gunshot fracture of the shoulder-joint that the operation should be resorted to. Injury to the large vessels, in gunshot fractures of the joint, do not, however, absolutely call for amputation. Demme reports two cases, in which the axillary artery was tied. One recovered under conservative measures, and the second patient recovered after partial resection.

In the subjoined table, showing the results of the operation, we have collected all the cases that could be made available. Larrey is said to have had 97 recoveries from 111 cases.[1] Pirogoff had over 250 amputations at the shoulder in the Crimea, from November, 1854, to June, 1855. Of the results of these operations he can only say, in general terms, that primary amputation never exceeded a mortality of 35 per cent., and that at the commencement of the war, the mortality of the primary amputations practised in the southern limits of Sebastopol was not more than 20 per cent.

Table showing the Results of Amputations at the Shoulder-Joint for Gunshot Injuries.

Where performed and authority.		Recovered.	Died.	Total.	Per cent. of mortality.	Primary.	Deaths	Per cent. of mortality.	Secondary.	Deaths.	Per cent. of mortality.
U. S. Army.	Otis	144	93	237	39.24	..	..	..	..	..	..
British, Crimea.	Macleod	41	19	60	31.66	33	9	27.27	6	4	66.66
French, "	Légouest	72	135	207	65.21	..	..	..	..	..	..
Italian war, 1859.	Demme	12	9	21	42.85	..	..	..	..	..	..
Schleswig-Holstein.	Stromeyer	7	3	10	30.00	..	..	..	..	..	..
India.	Macleod	3	1	4	25.00	4	1	25.00	..	..	..
Sedillot, at Constantine.	"	..	2	2	100.00	2	2	100.00	..	..	..
Larrey, Jr., at Antwerp.	"	6	2	8	25.00	5	0	..	3	2	66.66
Alcock, Spain.	"	8	2	10	20.00	9	1	11.11	1	1	100.00
Guthrie, "	"	22	16	38	42.10	19	1	5.27	19	15	78.95
Guthrie, Waterloo.	"	11	7	18	38.88	6	1	16.66	12	6	50.00
Larrey, 1830.	"	1	1	2	50.00	..	..	..	2	1	50.00
Paris, June, 1848.	Légouest	6	3	9	33.33	..	..	..	..	..	..
U. S. Navy.	Horwitz	8	2	10	20.00	..	..	..	..	..	..
		341	295	636	46.38	78	15	19.23	43	29	67.44

It is thus to be seen that of 636 amputations at the shoulder-joint for gunshot injuries, 341 cases recovered, and 295 died, the percentage of mortality being 46.38 or 13.10 per cent. greater than that of excision of the shoulder-joint. Of 78 primary disarticulations 63 were successful, and 15, or 19.23 per cent., died. On the other hand, of 43 secondary disarticulations, only 14 were successful, and 29, or 67.44 per cent., were fatal; a ratio in favour of primary disarticulation of not less than 48.21 per cent. The advantages of primary over secondary amputation are so apparent that they need no further consideration ; early operation being a very successful procedure, while late operation affords a mortality of only 5.53 per cent. less than that of secondary amputation at the hip-joint.

Among the causes of death after amputation at the shoulder, Pirogoff refers to secondary hemorrhage from the axillary artery, and expressed his surprise that so little mention is made of this danger by authors on military surgery. He has met with consecutive bleeding oftener after this, than after any other amputation ; and has, for its arrest, been obliged to ligate the subclavian artery, in three instances, and the axillary artery, in the first part of its course, in one. He also knows of two additional subclavian deligations by other surgeons. It is to be remarked that in the majority of these cases, the wound had almost united. In all he observed that the inferior flap had been cut too short, and that the axillary artery had been divided close to an important collateral branch, as the subscapular. In the U. S. army ligation of the subclavian was practised in thirteen instances for the same cause, of which four were successful; and we have, ourselves, met with one case of secondary hemorrhage after disarticulation at the shoulder, in which we succeeded in saving the patient by opening the stump and throwing a ligature around the axillary artery.

---

[1] Beck, Die Schusswunden, p. 323, Heidelberg, 1849.

The *conservative* treatment of gunshot fractures of the shoulder-joint is of very doubtful propriety, since the mortality is greater than that of amputation or excision, and, even if the life of the patient be saved, the joint will be stiff. The experience of the Schleswig-Holstein, Crimean, Italian, and American wars, shows that cases left to nature will sometimes recover. Esmarch, Stromeyer, Macleod, Pirogoff, Demme, Guthrie, and our own surgeons, have met with quite a number of such instances. If it be determined to make an attempt to save the limb, the most energetic antiphlogistic means will be called for, at the head of which may be placed the continuous application of ice and local bloodletting. Splinters of bone, balls, or other foreign substances, must be removed; collections of pus call for early and free incision; and perfect rest of the joint must be maintained. Under these measures, extensive injuries may heal without resorting to excision or amputation; but the majority of patients will die of hectic, pyæmia, or hemorrhage. The treatment is very tedious; numerous sinuses will form, the healing of which will be delayed for many months; and in nearly all of the recoveries the joint will be found to be completely anchylosed.

The following table sets forth the *comparative advantages* of excision, amputation, and conservative measures, in the treatment of gunshot fractures of the shoulder-joint. It will be seen that excision has effected the most satisfactory results; that amputation comes next; and that the mortality of conservative means is much higher than the mortality of either of the former operations. Fortunately for the comparison, the number of cases of amputations and excisions is almost the same.

Mode of treatment.	Authority	Where observed.	Number.	Recovered.	Died.	Per cent. of mortality.
1. Conservative measures	Otis	U. S. Army . . .	36	20	16	44.44
	Demme	Italy, 1849 . . .	43	14	29	67.44
	Stromeyer	Schleswig-Holstein .	8	3	5	62.50
			87	37	50	57.47
2. Excision	Preceding table	...	634	423	211	33.28
Primary	"	...	232	174	58	25.00
Secondary	"	...	317	196	121	38.17
3. Amputation	"	...	636	341	295	46.38
Primary	"	...	78	63	15	19.23
Secondary	"	...	43	14	29	67.44

Gunshot fractures of the *elbow-joint* are much more serious than those of the shoulder, the most dangerous wounds being those in which the ball penetrates the joint from its front or lateral aspect, in both of which events, the brachial artery is liable to be opened. Division of the ulnar nerve by a ball entering from the side, is not often met with; and, even if it be injured, it should not be considered of any special moment, since Pirogoff remarks that he is cognizant of several cases, in none of which was division of the nerve followed by paralysis of the ring and little fingers. Varying in gravity from fracture of one condyle, the olecranon, or coronoid process, to extensive shattering of one or more of the articular extremities of the bones entering into the formation of the joint, the most common injuries are comminution of the articular end of the humerus and olecranon process, or of all the bones.

Excision of the elbow-joint is an operation which every military surgeon should consider it his imperative duty to practise, to the exclusion of amputation of the arm, in favourable cases. The merit of having introduced the procedure into military practice belongs to Langenbeck and Stromeyer, and so successful were the results obtained from it by these and other German surgeons, that, as we learn from Esmarch, in the Schleswig-Holstein wars of 1848, 1849, and 1850, it gradually, but surely, superseded amputation of the arm, for simple comminution of the articulation by bullets. In the Crimea, it must be said to their credit, the Russian surgeons made excision the rule, amputation the exception. It is, however, to be regretted that Pirogoff has not given us any available statistics which we can include in our table of excisions. This eminent surgeon says, however, that upwards of two hundred excisions were practised in one year, during and after the siege of Sebastopol, and that the mortality of the operation did not exceed 20 per cent. The allies, on the other hand, appear to have preferred amputation. Indeed, we do not find that the French surgeons performed excision at all. In the British army, the number of cases was small, the injuries adapted for it being, according to Macleod, not numerous. In the Italian war of 1859, the French and Italian surgeons resorted to amputation, or employed conservative measures. The only excisions, of which Demme had any knowledge, were two performed at the St. Spirito Hospital, Verona, by Neudörfer, both of which were successful. In the United States army, during the late war, excision was not practised as often as it should have been, the number of cases being far less than the number of amputations of the arm.

When we consider the very satisfactory results of excision of the elbow-joint, the small ratio of mortality, and the preservation of a more or less useful limb, we must express our surprise that the operation has not more frequently been resorted to. We have, ourselves, reported six secondary cases, in all of which the life of the patient was saved, and in only one was the limb comparatively useless. It is, therefore, to be hoped that the tables which we have compiled of this operation, disarticulation at the elbow-joint, and amputation of the arm, will have the effect of rendering excision more popular.

Table showing the Results of Cases of Excision of the Elbow-Joint for Gunshot Injuries.

Where performed and authority.	Cases.	Recoveries.	Deaths.	Per cent. of mortality.	Remarks.
U. S. Army. Otis	286	224	62	21.67	
U. S. Navy. Horwitz	2	2	...	...	
Schleswig-Holstein. Esmarch	40	34	6	15.00	11 primary, 1 death; 29 secondary, 5 deaths.
Brit. Army, Crimea. Matthew	22	19	3	13.63	18 primary, 3 "
Rudinsky, " Pirogoff	18	16	2	11.11	All primary operations.
Italian war. Demme	2	2	...	...	
Parisian Revolutions. Roux & Demme	16	11	5	31.25	
	386	308	78	20.20	

The above table shows that of 386 excisions of the elbow-joint for gunshot injuries, 308 cases recovered, and 78 died, the percentage of mortality being 20.20 of 47 primary operations, 6, or 12.76 per cent. were fatal; and of 33 secondary excisions, 5, or 15.15 per cent. were fatal; being a ratio of only 2.39 per cent. in favour of early excision. These results confirm the rule, established by Esmarch, to operate as soon as possible after the infliction of the injury; and the remarks, offered in regard to delaying the operation in the early suppurative stage, after gunshot fractures of the shoulder-joint, apply equally to the injuries under consideration.

In the different campaigns, from which our table is mainly made up, the wars of the Duchies alone afford any statistics which enable us to form definite or satisfactory conclusions as to the results of excisions of the elbow-joint. In the Schleswig-Holstein campaigns forty patients were subjected to the operation. Of these, Esmarch says, "six died, one is not yet healed; in one the forearm mortified, and it was necessary to remove it by amputation, the remaining thirty-two are completely healed, and have a more or less useful arm. As regards two of them, I have not been able to learn anything with reference to the power of motion they possess; of the rest eight have very extensive, nine more or less complete, power of motion. On the other hand, thirteen of the cases have a more or less complete anchylosis of the joint."

Partial excision of the joint is objected to by the majority of army surgeons on the grounds that it is more hazardous, more liable to fail, the cure is more tedious, and the amount of motion is less, than after total removal of all the articular surfaces. Pirogoff has seen no marked difference in the results of the two operations. Stromeyer and Esmarch, who have had great experience in these procedures, on the other hand, are very decidedly in favour of partial excision, and oppose total operations. Their results show that anchylosis is more seldom met with after partial excision, particularly if the operation be performed within the first forty-eight hours after the reception of the injury, the joint, previous to the operation, having been enveloped in ice. Thus, of 37 partial excisions, 14, or 38 per cent., were followed by anchylosis; in 17, or 45 per cent., there was limited motion; and in 6, or 16 per cent., the motion was free. Of 9 total excisions, 4, or 44 per cent., recovered with anchylosis; 4, or 44 per cent., had limited motion; and in 1, or 11 per cent., was the motion free.[1] These data, which appear to have been overlooked by many writers on military surgery, declare in favour of partial excisions, and sustain Stromeyer's opinion that the mobility of the joint does not depend so much upon the extent of the parts excised, as upon the retention of a portion of the synovial membrane.

Amputation of the arm should never be practised for simple comminution of the bones of the elbow. The operation will only be required when such cases are complicated by injury to the brachial artery, or by extensive laceration, or loss of soft parts. The following table shows the results of the operation.

---

[1] See Stromeyer, p. 493.

Table showing the Results of Amputation of the Arm for Gunshot Injury.

Where performed and authority.		Cases.	Recoveries.	Deaths.	Percentage of mortality.
U. S. Army.	Otis	1949	1535	414	21.24
U. S. Navy.	Horwitz	60	56	4	8.66
French Army, Crimea.	Légouest	990	463	527	53.23
British " "	Matthew	143	110	33	23.07
Schleswig-Holstein.	Stromeyer	54	35	19	35.18
Italy, 1859.	Demme	240	169	71	29.58
		3436	2368	1068	31.08

It is thus to be seen that of 3436 cases of amputation of the arm, 2368 terminated in recovery, and 1068 terminated in death, the percentage of mortality being 31.08. These operations cannot, unfortunately, be classified; but we would, naturally, expect that amputation in the lower third would be less fatal than removal of the arm higher up. We are also very much at a loss as regards the mortality of primary and secondary amputations in military practice. The tables of Mr. James R. Lane, of London, indicate that of 137 primary operations in army practice, 36, or 26.27 per cent., were fatal; whereas, of 66 secondary cases, 18, or 27.27 per cent., died.

Amputation at the elbow-joint for gunshot injuries of that articulation, can only be practised in those cases in which the condyles of the humerus are not at all fractured, or only slightly so. The operation does not appear to have found favour with either military or civil surgeons. It is not even referred to by Macleod, Stromeyer, or Esmarch. Pirogoff seems to have performed it. Légouest has practised it once with success, and urges its further trial. Demme and Roux oppose it; but Langenbeck favours it. The cases, twenty-one in number, which occurred in our army and navy during the late war, were all successful. Of the French operations, twenty-six were performed by Salleron at Constantinople, with but five deaths. In addition to the successful cases included in our table, we are informed by Légouest that Malgaigne, Jobert, and Soupart, have each practised the operation in two cases, with success. Malgaigne says that Dupuytren also operated ten or twelve times, in every instance with a favourable result; and Beck credits Paré, Purmannen, Brasdor, and Steiner with one success each. These recoveries are of sufficient importance to demand extended trials of the operation; notwithstanding the fact that our table indicates that the mortality is 3.19 per cent. greater than that of amputation of the arm.

Table showing the Results of Amputation at the Elbow-Joint for Gunshot Injury.

Where performed and authority.		Cases.	Recoveries.	Deaths.	Percentage of mortality.
U. S. Army.	Otis	19	19	...	...
U. S. Navy.	Horwitz	2	2	...	...
French Army, Crimea.	Légouest	41	20	21	51.21
Italian war, 1859.	Demme	2	1	1	50.00
		64	42	22	34.37

The *conservative* treatment of gunshot fractures of the elbow-joint has not been so successful as in the case of the shoulder-joint, so that, on the whole, army surgeons have not been disposed to make efforts to save the elbow without excision, for the reason that, as Stromeyer expresses it, "the fragments are of that kind usually, that their extraction seems almost impossible, even after suppuration has been fully established, without freely laying open the joint." Even in the most favourable cases, the patient recovers, after long suffering, with an anchylosed articulation. Nor would it appear that attempts to save the joint should be made with a view to late excision, in case our efforts did not succeed in preserving the joint, since secondary or late operations are more fatal than those which are performed immediately. All army surgeons have met with cases of recovery, after extensive shattering of the bones, without operation. Of 34 injuries to the elbow among British officers and men in the Crimean war, 4 were fatal without operation; 7 were invalided, having recovered under conservative measures, with a varying amount of stiffness or partial anchylosis of the joint; and the remainder were exsected or amputated. In the Italian hospitals, during the war of 1859, Demme reports 81 cases treated without operation, of which only 29 recovered. The causes of death were principally pyæmia and exhaustion. In the majority of cases, the joint was useless. Without prolonging the subject, the experience of different campaigns warrants us in concluding that conservative measures, without operation, are to be rejected in the treatment of gunshot fractures of the elbow-joint.

The *comparative advantages* of the different modes of treating these injuries may be determined by an inspection of the following table, from which it is evident that excision holds the first place, after which come amputation of the arm, amputation at the elbow, and, finally, conservative measures.

Mode of treatment.	Authority.	Where observed.	Number.	Recovered.	Died.	Per cent. of mortality.
1. Conservative measures	Demme	Italian hospitals, '59	81	29	52	64.19
	Stromeyer	Schleswig-Holstein .	3	3	...	...
			84	32	52	61.90
2. Excision	Preceding table	...	386	308	78	20.20
Primary	"	...	47	41	6	12.76
Secondary	"	...	33	28	5	15.15
3. Amputation of the arm	"	...	3436	2368	1068	31.08
Primary	"	...	137	101	36	26.27
Secondary	"	...	66	48	18	27.27
4. Amputation at the elbow	"	...	64	42	22	34.37

Gunshot fractures of the *wrist-joint*, unless complicated by the presence of a ball, or by hemorrhage, usually pursue a satisfactory course, but heal with anchylosis. The treatment of these injuries differs most materially from that of fractures of other joints, inasmuch as conservative measures effect the most satisfactory results. If, however, they are neglected in the first instance, caries, thecitis, and extensive and very painful suppuration, are much to be feared, and death will be very apt to ensue from pyæmia, exhaustion, and hectic.

The following table exhibits the *comparative advantages* and results of the different modes of treating these injuries:—

Mode of treatment.	Authority.	Where observed.	Number.	Recovered.	Died.	Per cent. of mortality.
1. Conservative measures	Demme	Italian hospitals, '59	79	68	11	13.93
	Stromeyer	Schleswig-Holstein wars	3	2	1	33.33
			82	70	12	14.63
2. Excision of the wrist-joint	Otis	U. S. Army . . .	29	26	3	10.34
	Légouest	Traité, etc., p. 744 .	1	1	...	...
	Demme	Ried's tables . . .	10	6	4	40.00
			40	33	7	21.21
3. Amputation at the wrist-joint	Otis	U. S. Army . . .	36	34	2	5.55
	Horwitz	U. S. Navy . . .	3	3	...	...
	Légouest	French Army, Crimea	74	38	36	48.64
	Matthew	British Army, Crimea	3	3	...	...
	Stromeyer	Schleswig-Holstein .	2	1	1	50.00
	Demme	Italian hospitals, '59	12	7	5	41.66
			130	86	44	33.84
4. Amputation of the forearm	Otis	U. S. Army . . .	599	500	99	16.52
	Horwitz	U. S. Navy . . .	17	17	...	...
	Légouest	French Army, Crimea	367	170	197	53.67
	Matthew	British Army, Crimea	80	75	5	6.25
	Stromeyer	Schleswig-Holstein .	14	12	2	14.28
	Demme	Italian war, 1859 .	112	75	37	33.03
			1189	849	340	20.10

An inspection of the foregoing table clearly shows that, in gunshot fractures of the wrist-joint, conservative measures offer the best chances of life, after which are to be ranked, in their respective order, amputation of the forearm, excision of the joint, and amputation at the joint.

The *conservative* treatment of gunshot fractures of the wrist-joint is indicated in all cases, unless extensive destruction of the tendons and other soft tissues calls for operative interference, and must be decidedly antiphlogistic from the very commencement. The wound is to be simplified as much as possible, by the removal of splinters of bone and any foreign substances that may be present, and by trimming the soft parts, so that they shall present no ragged edges. The hand should be supported in a splint, in an elevated position, and ice should be freely used locally. Collections of pus, which will occur generally upon the back of the hand and upon the radial side of the joint, demand early and free incisions. Phlegmonous inflammation and thecitis will be best met by tincture of iodine; and tepid bathing and irrigation will be found useful. Venesection is strongly urged by Stromeyer: but it does not appear to have been resorted to in the Italian hospitals. If, by this course of treatment, we succeed in preventing inflammation in the second row of carpal bones, Demme says "it is possible, through passive motion, to obtain motion between the two rows of the carpus, which will, in great part, compensate for the anchylosis of the radio-carpal articulation."

Excision of the wrist-joint in military practice, so far as the meagre literature of the subject permits us to judge, has always been partial; and it may be laid down as a rule, that the operation should be limited to the epiphyses of the radius and ulna, leaving intact the first row of carpal bones, unless they be involved in the injury. Of the 35 cases which occurred in the U. S. army, Dr. Otis says, "in 27 the ends of the radius or ulna, or of both, were removed, and, in some instances, shattered fragments of the upper row of carpal bones. In 8, the greater part of the carpus was excised. Death took place once from pyæmia, and twice from exhaustion from protracted suppuration and irritative fever. 26 are reported as recovered; and in 2 cases, amputation of the forearm became necessary. The reports are unsatisfactory in relation to the amount of mobility left in the hand."

Excision of the wrist, at the best an awkward and difficult operation, on account of the presence of the flexor and extensor tendons, is not an encouraging operation for gunshot fractures of the joint. Our table indicates that of 40 cases, 33 recovered, and 7, or 21.21 per cent., died. Dr. Heyfelder's statistics of the operation for disease and injury, show somewhat better results, since of 49 cases there were but 9 deaths, or a mortality of 18.36 per cent. We know nothing of the cases contained in the tables of Dr. Ried; but the results obtained by American surgeons place the operation in a favourable light, as the mortality of their cases was only 10.34 per cent. We are, therefore, of the opinion that the operation demands further trials, particularly as the number of cases, at the present time, scarcely justify a comparison between it and amputations.

Amputation of the forearm should not be resorted to when it is possible to save the hand, with any prospect of even fair future usefulness; and primary amputation should never be practised, except when there is great destruction of all the tissues. In all other cases, it should be deferred until conservative measures have had a fair trial. From our table it will be remarked that of 1189 amputations of the forearm, 849 were successful, and 340 fatal, the percentage of mortality being 20.10 per cent.

Amputation at the wrist-joint has been practised for gunshot injuries of the articulation, the carpal, and metacarpal bones, 130 times, 86 patients recovered, and 44, or 33.84 per cent., died. The operation is easy of performance, and leaves a most excellent stump. During our late war, the operation was performed by army and navy surgeons 39 times, with only 2 deaths, the mortality, therefore, having been but 5.13 per cent. These results show that, whenever it is practicable, it should be preferred to removal of the forearm.

Gunshot injuries of the long bones.—Of the various injuries to which the shafts of the long bones are liable, our space will only admit of the discussion of fractures produced by projectiles of war; and our chief aim will be to contrast the several advantages of conservative measures, resection, and amputation, and deduce from all available sources of statistical information the most successful plan of treatment.

There can be no doubt that cylindro-conoidal balls, from their size and peculiar shape, but particularly on account of their immense velocity and character of motion, inflict greater destruction than round musket balls; but modern army surgeons, in regarding the intensity of these injuries, appear to have lost sight of the fact that the old round projectile is capable of producing very grave lesions, which, according to our observations, differ from those inflicted by conical balls only in there being less comminution and longitudinal splintering. We agree with Stromeyer and Otis that the degree of difference in the injuries has been exaggerated. The former distinguished surgeon remarks, "It need not excite surprise when I state that the effects produced on the bones by round musket and rifle balls do not differ from those produced by conical balls; since the intensity of the injury depends more upon the velocity of the missile than upon its size and shape." Pirogoff, in his *Medical Report of a Journey in Caucasia*, has shown that the small, round copper balls of the Circassians, which weigh only two drachms, and are fired from very long rifles with a heavy charge of powder, shattered the bones as badly as the large leaden bullets of the Russians, which weighed two ounces.

Dr. Otis has remarked a singular effect, which is occasionally produced on the femur by the heavy conoidal ball, fired at a short range.

> "The femur is fissured and comminuted, though less than is common, at the point at which the ball impinges, while at two or three inches above or below this point, according as the point of impact is below or above the middle of the shaft, a nearly transverse fracture of the shaft is produced. The best examples contained in the Army Medical Museum are those in which a ball has struck the condyles anteriorly, and the shaft is snapped across two inches above. In several of these specimens, the transverse fracture is not connected with the comminuted fracture produced by a ball."

We have had some curiosity to ascertain the relative frequency of the occurrence of gunshot fractures of the long bones of the extremities with each other and with gunshot wounds in general; and have found that the femur is most often affected, after which come the humerus, the bones of the leg, and the bones of the forearm. We have also discovered that the relative proportion of frequency of fractures of the long bones, including the scapula and clavicle, to all other gunshot wounds, is 9.64 per cent., the computation having been based on 107,898 gunshot injuries, with 10,410 fractures. The cases are apportioned as follows: U. S. army, 82,538 wounds and 7815 fractures, or a frequency per cent. of 9.46; U. S. navy, 3266 wounds and 486 fractures, or 14.88 per cent.; British army, Crimea, 12,094 wounds and 959 fractures, or 7.92 per cent., and, according to Demme, in the hospitals of Brescia and Milan, 10,000 wounds and 1150 fractures, or a ratio frequency of 11.50 per cent. The great majority of these cases were examples of complicated fractures, that is, compound or comminuted, or both.

Simple gunshot fractures of the long bones are sometimes met with. The examples seen in the British army in the Crimea, we are informed by Dr. Matthew, were occasioned by contusions inflicted directly by shot or shell, but more frequently by large stones displaced by these missiles from the parapets. The cases reported by Demme were produced principally by large shot "en ricochet." During our service in the Department of the South, we met with a number of apparently simple subcutaneous fractures of the bones of the leg inflicted by the explosion of torpedoes, some of which we have already reported in this Journal for April, 1866. These injuries demanded primary amputation, as all the tissues of the limb were extensively disorganized. Of 600 gunshot fractures of the diaphysis of the long bones of the extremities, observed by Demme in Italy, 33, or 5.5 per cent., were examples of simple fracture. Saurel, of Montpellier, has collected only 10, or 3.3 per cent., of such lesions, out of 300 cases; and in the British army in the Crimea of 959 fractures, 56, or 5.8 per cent., were simple. Of 1859 gunshot fractures of the shafts of the long bones, therefore, only 99 were instances of simple fracture, the proportion of their frequency, when compared with complicated fractures, being 5.32 per cent.

In the *conservative* treatment of complicated fractures of the long bones, the first indication is the extraction of foreign bodies, and loose or partially detached splinters. This practice should be strictly enforced, even if it be necessary to enlarge the wound, since by placing the fracture in as simple a condition as possible, much subsequent suffering and danger will be avoided. Stromeyer, Esmarch, Jobert de Lamballe, and Pirogoff, alone appear to disapprove of the removal of splinters which retain any attachment; but the united experience of the leading modern army surgeons proves the incorrectness of their views. As regards splinters which are extensively adherent, all surgeons are agreed that they should not be interfered with, but that they should be allowed the chance of becoming united with the shaft of the bone. The fracture having been thus simplified, the line of practice usually adopted is to place the limb in the most comfortable condition possible, and to retain it so by means of cushions and splints until the early inflammatory action has been subdued, when our efforts should be directed to maintaining the whole limb and the seat of fracture perfectly quiet and fixed. These objects are best fulfilled by the fenestrated starch or plaster-of-Paris bandage, the latter of which, however, will be found to answer the best purposes as an immovable apparatus.

A strict adherence to the antiphlogistic treatment, in this class of injuries, is insisted upon by the Schleswig-Holstein surgeons, Guthrie, Légouest, and Baudens, the principal measures being bloodletting, frequent saline purgatives, low diet, and the persistent local application of ice by means of rubber bags. Demme is opposed to general bleeding, but approves of leeches; while Pirogoff and Neudörfer regard the abstraction of blood as particularly pernicious. In gunshot fractures of the femur, Stromeyer even goes so far as to recommend venesection as an expectant measure, as he says, "during the first three days one or two abstractions of blood must be looked upon as indispensable;" a course of treatment we agree with Pirogoff in condemning, since the majority of complicated gunshot fractures prove fatal from exhaustion from profuse suppuration, or pyæmia, and it behooves us, therefore, to sustain the strength of the patient as much as possible, instead of resorting to a measure which can only hasten on his death. Ice is regarded by the majority of surgeons as the most effective of all local antiphlogistics; but Neudörfer, Pirogoff, and Légouest, do not favour its employment. Stromeyer and Demme, on the other hand, insist on its great usefulness: according to their experience, it often does away with the necessity for the abstraction of blood and incisions, although the latter will sometimes be required to guard against gangrene and diffuse collections of pus. Even in the suppurative period, ice-bags should be employed without intermission, as they diminish the formation of pus, and rapidly promote the healing process.

Having thus given a brief and cursory review of the general management of gunshot fractures of the long bones, we desire next to call attention to the plaster-of-Paris bandage, a mode of dressing first applied to this class of injuries by Pirogoff, and of which he writes:—

> "I pride myself on having introduced two measures into army practice, namely: anæsthetics on the field of battle, in Caucasia, in 1847, and the plaster-of-Paris bandage, in the Crimea, in 1854. * * * Stromeyer says that amputation will have to be resorted to when ice and leeches cannot be obtained; but I say, amputation will be necessary only when gypsum and other materials for the application of immovable apparatus are not available."

It is well known that the experience of this distinguished Russian surgeon in the conservative treatment of gunshot fractures of the bones of the upper extremity, in the Caucasian war of 1847, was so unfavourable that he appears, finally, to have amputated for all such injuries. In the Crimea, on the other hand, his attempts to save limbs were crowned with more success than when the limb was removed, so that the general adoption of the plaster-of-Paris bandage, of which he speaks in the highest terms, and to which he ascribes his happy results, is entitled to the most earnest consideration. He holds that perfect rest and fixture of the extremities of bones broken by gunshot, are indispensable from the very outset of the treatment, and that these objects are best fulfilled by the application of the immovable plaster-of-Paris apparatus. The bandage is indicated, first, in recent fractures, where it is particularly useful in preventing inflammatory infiltration and swelling of the limb, by affording an equable support and compression ; and, secondly, in the stage of suppuration, after swelling and other local signs of inflammation have subsided. It is contra-indicated in those cases which are first seen after traumatic infiltration and tumefaction have already been developed.

Mr. Pirogoff's directions for applying the apparatus to the different segments of the limbs in cases of simple or complicated fracture of the bones and joints, are clear, and easily understood. The advantages claimed for this mode of dressing are its trifling cost, the rapidity with which it dries and adapts itself to the limb, and the fact that it renders transportation easy, by forming a hard, unyielding case, which permits the limb to be handled with great safety. It, moreover, requires very little attention, and has to be changed very rarely. Mr. Pirogoff informs us that he has treated dozens of gunshot fractures with the plaster-of-Paris bandage, in which all that was necessary was to inspect and cleanse the wound through the opening in the apparatus, and that, during a treatment continuing for four weeks, the whole time required for the dressing of the wound did not exceed three-quarters of an hour. An attentive perusal of the remarks of the author on this mode of treating fractured limbs cannot fail to convince any one of its great safety and utility.

Resections of portions of the shafts of long bones have been but little practised as formal operations, as they are regarded not only as unnecessary and dangerous, but also as prejudicial, from the fact of the union of the divided extremities being uncertain and imperfect. The cases of resection referred to in our tables were, with few exceptions, instances in which the sharp protruding ends of the broken bone, that could not easily be replaced and retained in position, were sawn off, or when the pointed extremities endangered the bloodvessels and nerves, or threatened to ulcerate through the soft parts. The mortality of these procedures, as indicated by our tables, was excessive for the femur ; and the best results were obtained in the following order : radius, ulna, both bones of the forearm, fibula, tibia, both bones of the leg, and femur.

Subperiosteal resection in the continuity of the long bones, the success of which depends upon the vitality of the periosteum, in order that new bone may be produced, cannot be extensively practised in gunshot injuries, as that membrane is generally so severely injured and so widely separated from the surrounding soft parts that its death is almost inevitable. The results of the operation, even under favourable circumstances, are not encouraging. We learn from Demme that Paravicini applied this method of resection to the clavicle, humerus, and, in two instances, to the radius, at the hospital of St. Maria di Loreto, at Milan, 1859. All the patients recovered, but in only one, resection of the radius, was regeneration of the bone clearly made out, the bond of union in the remaining cases being fibrous tissue. In both of the forearm cases, the movements of pronation and supination were very limited. In the hospitals of Vercelli, Larghi removed large portions of the shaft of the femur for comminuted gunshot fracture, in five instances; but, unfortunately for the results of his experiments, his patients were carried off by hospital gangrene.

Gunshot fractures of the *femur* were regarded for a long period by the majority of surgeons as absolutely calling for amputation of the thigh. Ravaton, Percy, Petit, Dupuytren, Ribes, Bégin, Baudens, Hennen, and Guthrie made the rule imperative, although Fournier-Pescay, in 1813, had reported five cases of recovery without having had to resort to so serious a measure. In a series of years, extending from 1847 to 1853, Hutin found a number of pensioned soldiers, in the Hôtel des Invalides, who had recovered from comminuted thigh-bones under conservative measures. Twenty were at the middle, nineteen below the middle, and twenty-four above the middle. During the same period there were twenty-one invalids who had suffered amputation of the thigh for similar injuries, five being at the middle, and sixteen below the middle, there being no instance of removal of the limb in the upper third. Although we can draw no comparison in these cases, yet the fact remains, that of eighty-four residents in the Hôtel des Invalides, who had suffered from compound fractures of the femur, sixty-three had been treated without amputation, and twenty-one had lost their limbs. In the Paris revolution of 1830, Jobert de Lamballe succeeded in saving several such cases, one of which is very interesting, from the fact of the femoral artery requiring ligation. The bone had been shattered by a ball at the juncture of the neck with the great trochanter and shaft, and there was so much hemorrhage that the artery was tied. In his brief comments on this case, Jobert remarks that the operation acted as a powerful antiphlogistic agent, and that the resulting inflammation and suppuration were much less than generally follow these injuries. The man ultimately recovered with a deformed and shattered limb.[1] Simon[2] narrates seven cases with five cures, and Sommé saved two out of eight at Antwerp, in 1830.

The foregoing facts, together with numbers of isolated recoveries, have had the effect of shaking the opinions of many surgeons, so that not a few modern army medical officers have rejected primary removal of the thigh for conservative measures, with a view to late amputation, should it be required. We thus find that in India many complicated fractures recovered without operation. In the Schleswig-Holstein wars, attempts to save the limb were more successful than amputations of the thigh, since they were in favour of the former by 10.15 per cent. In the Crimean war, the surgeons of the respective forces appear to have determined to endeavour to save limbs which, in former campaigns, would have been amputated. Notwithstanding the remarks of Macleod, that "unfortunately a sad experience only confirmed the hopeless nature of compound fractures of the thigh by gunshot;" "in trying to save limbs we lost many lives;" and, "I have only been able to find a record of three cases in which the recovery followed a compound fracture of the upper third of the femur, without amputation," yet a careful examination of the records of the British wounded shows that, although the mortality from conservative measures was very great, namely, 78.40 per cent., it exceeded that of amputation of the thigh by only 16.16 per cent., which may be accounted for by the bad hygienic condition of the troops. In the French army, on the other hand, 92.02 per cent of the amputated cases perished, while only 65.28 per cent. of those treated by conservation died, the mortality rate of the latter having the advantage by 26.74 per cent., which it maintained, as our table exhibits, in the different regions of the thigh. Baudens, who, previous to the Crimean war, favoured amputation in complicated fractures of the femur, has reported ten cases saved without operation, at the Gulhané hospital, at Constantinople, five being in the upper third, three in the middle, and two in the lower third. In the Russian army, the mortality of thigh amputations was computed by Pirogoff to be between 80 and 85 per cent. He can recall only three successful removals of the thigh in the upper third, while he met with twenty recoveries from gunshot complicated fractures, without operation, in the same region. He very decidedly leans to making an attempt to save the limb, and says:—

---

[1] Plaies d'Armes à Feu. Paris, 1833, p. 262.

[2] Ueber Schusswunden, Giessen, 1851.

> "Henceforth the question of the advantage of conservative measures must be considered as settled. We must not be discouraged, as were Guthrie, Macleod, and Baudens, of whom the first saw with a percentage of mortality of 58, only 18 recoveries, and of these only 5 had a useful limb; the second met with a mortality of 91 per cent.; and the third lost all of his 30 cases treated conservatively."

In the Italian war, according to Gherini, the mortality rate was in favour of conservative measures by 3 per cent.; but the tables of Demme show a far better result, since the mortality of amputations was 74.47 per cent., while that of conservative treatment was 52.12 per cent., a difference of 22.35 per cent. in favour of the latter, and, as our table shows, the advantage was maintained in the different segments of the thigh. In the U. S. army, the mortality-rate of thigh amputations was 64.43 per cent., or 1.01 per cent. greater than that of attempts at saving the limb, the deaths in the latter cases having been 63.42 per cent.; although Professor Hamilton says that "our own impression is that, in these injuries, conservative measures have ruled too much, and amputation has been too little practised."

The *conservative* treatment of gunshot fractures of the femur, as shown by the experience of the wars of the Duchies, Crimea, Italy, and the United States, has been more successful in preserving life than amputation of the thigh. This result is contrary to the generally received opinion, but its truth is attested by the following table.

Table showing the Mortality of the Conservative Treatment of Gunshot Fractures of the Femur.

Where observed and authority.		Number.	Recoveries.	Deaths.	Percentage of mortality.	Percentage of mortality of thigh amputations.
U. S. Army.	Otis	741	271	470	63.42	64.43
Italian war, 1859.	Demme	165	79	86	52.12	74.47
British Army, Crimea.	Matthew	88	19	69	78.40	62.24
French " "	Légouest	337	117	220	65.28	92.02
Schleswig-Holstein.	Stromeyer	28	14	14	50.00	60.15
Baudens.	Demme	30	1	29	96.66	...
Paris Revolutions 1830 and 1848.[1]		33	14	19	57.57	58.46
Guthrie.		43	18	25	58.11	...
		1465	533	932	63.61	76.30

It is thus to be perceived that of 1465 attempts to preserve life and limb after gunshot fractures of the thigh-bone, 533 were successful, and 932 fatal, the ratio of mortality being 63.61 per cent. If we contrast these data with those of amputation of the thigh, we will find that of 4123 cases of the latter description, 3146 were fatal, the mortality percentage being 76.30, so that the death-rate is in favour of conservative measures by 12.69 per cent. This result is very different from that heretofore obtained, and, as we shall presently show, it was maintained in the several thirds of the thigh.

---

[1] Communications faites à l'Acad. Nat. de Méd., Paris, 1849, par Malgaigne, Hugier, Jobert, Baudens, et Roux.

Resection of the femur in its continuity has proved to be a more fatal procedure than amputation at the hip, and should, therefore, not be repeated. Of 47 cases, 6 recovered, and 41 died, the ratio of mortality being 87.23 per cent.

The *comparative advantages* of amputation of the thigh, conservative measures, and resection are so clearly set forth in the following table that they need no discussion. It will be seen that resection should be discarded, and that the results of the first measure when compared with those of conservative treatment in the different segments of the limb, are very decidedly in favour of the latter, particularly in the middle and upper thirds of the thigh. Thus the mortality of conservative measures in the upper third is less by 9.90 per cent. than that of amputation in the same region; in the middle third the mortality is in favour of conservation by 12.97 per cent., and in the lower third by 4.24 per cent., the difference not being very material.

It should be remarked that the cases treated by conservative measures were, as a rule, selected for the experiment, and that the amputations include the very worst injuries.

Table showing the Results of the Different Modes of Treating Gunshot Fractures of the Femur.

Mode of treatment.	Authority.	Where observed.	Segment of thigh.	Number.	Recovered.	Died.	Per ct. of mortality.
1. Conservative measures	Otis	U. S. Army . . .	Upper third	330	93	237	71.81
	Légouest	French, Crimea .	" "	72	28	44	61 11
	Demme	Italy, 1859 . . .	" "	43	18	25	58.14
				445	139	306	68.76
	Otis	U. S. Army . . .	Middle third	238	106	132	55.46
	Légouest	French, Crimea .	" "	43	22	21	48.83
	Demme	Italy, 1859 . . .	" "	46	18	28	60 87
				327	146	181	52.29
	Otis	U. S. Army . . .	Lower third	173	72	101	58.38
	Légouest	French, Crimea .	" "	46	30	16	34.78
	Demme	Italy, 1859 . . .	" "	76	43	33	43.42
				295	145	150	50.84
2. Amputation of the thigh	Demme	Italy, 1859 . . .	Upper third	109	14	95	87.15
	Légouest	French, Crimea .	" "	72	28	44	61.11
	Matthew	British, Crimea .	" "	44	6	38	86.36
				225	48	177	78 66
	Demme	Italy, 1858 . . .	Middle third	158	44	114	72.15
	Légouest	French, Crimea .	" "	43	22	21	48.82
	Matthew	British, Crimea .	" "	67	27	40	59.70
				268	93	175	65.26
	Demme	Italy, 1859 . . .	Lower third	125	48	77	61.60
	Légouest	French, Crimea .	..	46	30	16	34.78
	Matthew	British, Crimea .		65	28	37	56.46
				236	106	130	55.08
3. Resection of the femur	Otis	U. S. Army . . .	..	38	6	32	84.21
	Baudens	Crimea	..	1	..	1	100.00
	Stromeyer	Schleswig-Holstein	..	3	..	3	100.00
	Larghi	Italy, 1859 . . .	..	5	..	5	100.00
				47	6	41	87.23

Gunshot fractures of the *bones* of the *leg* appears to do well under any form of treatment, as may be seen from the following table, which shows the comparative advantages of the different modes of handling this class of injuries. Amputation of the leg gives a greater mortality rate by 8 per cent. than that of resection or conservative measures, between the latter of which there is only a fraction of a difference, the mortality of resection of one or both bones being 24.52 per cent., while that of conservative measures as applied to one or both bones is 24.80 per cent. If we separate the cases, however, we will find that resection of both bones was less fatal by 5.78 per cent. than conservation; whereas resection of the tibia was more fatal by 7.63 per cent. than conservative measures, and resection of the fibula was also more fatal by 5.51 per cent. than attempts to save the limb by purely conservative measures. Nine of the resected cases required ultimate amputation, 5, in which the tibiæ were involved, 3, in which the fibula was resected, and 1, in which both bones had been excised.

Table showing the Results of the Different Modes of Treating Gunshot Fractures of the Bones of the Leg.

Mode of treatment.	Authority.	Where observed.	Bones.	Number.	Recovered.	Died.	Per ct. of mortality.
1. Conservative measures	Stromeyer	Schleswig-Holstein	Both	8	7	1	..
	Matthew	British, Crimea .	"	59	31	28	..
				67	38	29	43.28
	Stromeyer	Schleswig-Holstein	Tibia	27	25	2	..
	Matthew	British, Crimea .	"	26	20	6	..
				53	45	8	15.09
	Stromeyer	Schleswig-Holstein	Fibula	23	20	3	..
	Matthew	British, Crimea .	"	17	14	3	..
				40	34	6	15.00
	Demme	Italy, 1859 . . .	Uncertain	98	77	21	21.43
				258	194	64	24.80
2. Resection of one or both bones of the leg	Otis	U. S. Army . . .	Both	5	4	1	..
	Stromeyer	Schleswig-Holstein	"	3	1	2	..
				8	5	3	37.50
	Otis	U. S. Army . . .	Tibia	59	48	11	..
	Stromeyer	Schleswig-Holstein	"	7	3	4	..
				66	51	15	22.72
	Otis	U. S. Army . . .	Fibula	75	60	15	..
	Stromeyer	Schleswig-Holstein	"	3	2	1	..
				78	62	16	20.51
	Demme	Italy, 1859 . . .	Uncertain	7	2	5	71.42
				159	120	39	24.52
3. Amputation of leg	Preceding table	..	..	3472	2308	1164	33.52

Gunshot fractures of the *humerus* rarely call for amputation on account of simple comminution of the bone; and we may here look for excellent results from conservative measures. Resection of parts of the shaft has been condemned by Ried, Textor, Langenbeck, Esmarch, Stromeyer, Demme, Pirogoff, and Baudens, all of whom based the mortality of the procedure at 50 per cent.; but the experience derived in the late war in the United

States has reduced the mortality rate to 25.87 per cent., or 5.21 per cent. less than that of amputation of the arm, a result which shows conclusively that resection of the humerus should be classed among the approved operations of army surgery. Of the American cases included in our table, 7 required ultimate amputation. We are informed by Dr. Matthew that the procedure was attended with favourable results in the British army in the Crimea, although he does not indicate how many times it was instituted.

The *conservative* treatment of these injuries has been attended by the most encouraging results, since of 1008 cases, 799 recovered, and 209 died, the mortality rate being 20.73 per cent., which is 10.35 per cent. less than that of amputation of the arm, and 5.14 per cent. less than that of resection in the continuity of the humerus. In the cases observed by Demme, the time required for a cure varied from forty to sixty days, and in five instances a false joint formed. In none of his cases did consecutive necrosis take place, while of 240 amputations of the arm which came under his notice, in 30 there occurred necrosis of the stump.

The following table exhibits the comparative advantages of conservative measures, resection and amputation of the arm, in the treatment of this class of injuries.

Table showing the Results of the Different Modes of Treating Gunshot Fractures of the Humerus.

Mode of treatment.	Authority.	Where observed.	Number.	Recovered.	Died.	Per cent. of mortality.
1. Conservative measures	Otis	U. S. Army . . .	693	547	146	21.06
	Stromeyer	Schleswig-Holstein .	29	24	5	17.24
	Demme	Italy, 1859 . . .	211	169	42	19.90
	Matthew	British, Crimea . .	75	59	16	21.93
			1008	799	209	20.73
2. Resection of the shaft of the humerus	Otis	U. S. Army . . .	175	133	42	24.00
	Horwitz	U. S. Navy . . .	6	6	...	...
	Stromeyer	Schleswig-Holstein .	9	5	4	44.44
	Demme	Italy, 1859 . . .	7	3	4	57.14
	Baudens	Crimea	4	2	2	50.00
			201	149	52	25.87
3. Amputation of the arm	Preceding table	...	3436	2368	1068	31.08

Gunshot fractures of the *bones* of the *forearm* are attended with fewer deaths than any other fractures of the long bones. Of 490 cases treated by conservative measures, 61 were fatal, the mortality being 12.43 per cent., or 7.67 per cent. less than that of amputation of the forearm. The mortality of the conservative treatment in fractures of both bones is 20.13, of the radius 9.15, and of the ulna 8.74. Of 280 resections of one or both bones, 35, or 12.50 per cent., were fatal, or 7.60 per cent. less than amputations. The mortality of resection of both bones is 17.24 per cent., of the radius 10.48 per cent., and of the ulna 13.38 per cent. In 7 of the resected cases subsequent amputation was necessary, 3 for the ulna, 3 for the radius, and 1 for both bones.

The following table shows the mortality of conservative treatment, resection, and amputation of the arm.

Table showing the Results of the Different Modes of Treating Gunshot Fractures of the Bones of the Forearm.

Mode of treatment.	Authority.	Where observed.	Bones.	Number.	Recovered.	Died.	Per ct. of mortality.
1. Conservative measures	Matthew	British, Crimea .	Both	26	24	2	..
	Demme	Italy, 1859 . . .	"	120	91	29	..
	Stromeyer	Schleswig-Holstein	"	8	8	..	..
				154	123	31	20.13
	Matthew	British, Crimea .	Radius	29	26	3	..
	Demme	Italy, 1859 . . .	"	107	96	11	..
	Stromeyer	Schleswig-Holstein	"	17	17	..	..
				153	139	14	9.15
	Matthew	British, Crimea .	Ulna	31	29	2	..
	Demme	Italy, 1859 . . .	"	129	116	13	..
	Stromeyer	Schleswig-Holstein	"	23	22	1	..
				183	167	16	8.74
2. Resection of one or both bones of the forearm	Otis	U. S. Army . . .	Both	29	24	5	17.24
	"	" " . . .	Radius	104	93	11	..
	Horwitz	" Navy . . .	"	1	1	..	..
	Stromeyer	Schleswig-Holstein	"	5	5	..	..
	Demme	Italy, 1859 . . .	"	9	7	2	..
	Baudens	Constantinople .	"	5	5	..	..
				124	111	13	10.48
	Otis	U. S. Army . . .	Ulna	116	100	16	..
	Horwitz	" Navy . . .	"	3	3	..	..
	Stromeyer	Schleswig-Holstein	"	2	2	..	..
	Demme	Italy, 1859 . . .	"	6	5	1	..
				127	110	17	13.38
3. Amputation of the forearm	Preceding table	..	..	1189	849	340	20.10

We have now examined not less than 19,362 cases of amputation, excision and conservative measures in the treatment of gunshot injuries of the bones and joints, of which 13,514 refer to amputations, 1822 to excisions, and 4026 to conservative measures. From this large number of statistical facts, the majority of which have been gleaned from the works placed at the head of this article, some important rules of practice may be deduced, and the mortality of the different modes of managing these lesions certainly arrived at. The following legitimate conclusions may be drawn from all the data contained in this article.

1. In gunshot injuries of the hip and knee-joints, excision and prolonged attempts to save the limb should be abandoned, secondary amputation at the hip and primary removal of the thigh in its lower third having proved to be the most successful measures.

2. In gunshot injuries of the femur, bones of the leg, ankle-joint, humerus, bones of the forearm, and wrist-joint, conservative treatment having been attended with the best results, should be adopted; while in similar lesions of the shoulder and elbow-joints, excision holds out the best chances of life, after which are to be estimated amputation and conservative measures.

3. The mortality of capital amputations of the upper extremity, based upon 5455 cases, is 32.44 per cent.; that of the lower extremity, computed from 8059 cases, being 47.11 per cent. The following scale of mortality may be adopted for the different segments of the limbs. Forearm 20.10; ankle 25.39; arm 31.08; leg 33.52; wrist 33.84; elbow 34.37; shoulder

46.38; knee 69.75; thigh 76.30; and hip 85.40. These results are very different from those usually adopted, and show that the rate of mortality does not necessarily increase in the upper extremity, as the trunk is approached.

4. Excisions in the continuity of the long bones of the extremities give the following percentages of deaths. Radius 10.48; ulna 13.39; ulna and radius 17.27; fibula 20.51; tibia 22.72; humerus 25.87; tibia and fibula 37.50; and femur 87.23.

5. Excisions of the joints afford the following scale of mortality. Elbow 20.20; wrist 21.21; shoulder 33.28; ankle 54.54; knee 71.42; and hip 90.69.

6. The conservative treatment of gunshot injuries of the bones and joints gives the following scale of mortality. Bones of the forearm 12.43; wrist 14.63; humerus 20.73; ankle 21.05; bones of the leg 24.80; shoulder 57.47; elbow 61.90; thigh 63.61; knee 82.02; and hip 92.22.

S. W. G.

ART. XV.—*Club-Foot: its Causes, Pathology, and Treatment;* being the Essay to which the Jacksonian prize for 1864, given by the Royal College of Surgeons, was awarded. By WILLIAM ADAMS, F.R.C.S., etc. etc. With one hundred illustrations on wood and stone. 8vo. pp. xviii., 422. London: John Churchill & Sons, 1866.

THIS handsome volume comes before us with what may be considered as the stamp of authority, having received the Jacksonian prize offered by the Royal College of Surgeons in 1864, for an "Essay on Club-foot, its causes, nature, and treatment." In its present form it has been altered, as we learn from the preface, only in such manner as was required by the change from a competitive essay with concealment of the author's name to an avowed publication in which the writer is entitled to claim for himself credit for any original observations or investigations he may have previously made. An appendix has also been added, containing the records of seventeen illustrative cases.

As the pathology and treatment of club-foot is comparatively little understood by the large majority of the profession in this as in other countries, we propose to call the attention of our readers to the more prominent points brought forward in Mr. Adams's volume, recommending at the same time a careful study of the book itself to all who may be called upon to conduct the treatment of this most troublesome class of cases.

The work before us contains twenty chapters, exclusive of the appendix, and is adorned with one hundred well executed wood-cuts, and a handsome lithographic plate illustrating the pathological changes in the minute anatomy of the muscles in cases of non-congenital club-foot.

The first chapter describes the various forms of club-foot, and gives a sketch of the history of subcutaneous tenotomy in the treatment of the affection. *Talipes* is a generic term for all forms of the disease; the author recognizes four principal varieties, to wit: *equinus, varus, valgus,* and *calcaneus,* with an equal number of mixed varieties, viz: *equino-varus, equino-valgus, calcaneo-varus,* and *calcaneo-valgus.*

In *varus* and *valgus* it is the anterior part of the foot alone that is inverted or everted, and *varus* is always, and *valgus* usually accompanied with elevation of the heel.

Each of the eight varieties named may be either congenital or non-congenital, though cases of true congenital equinus are exceedingly rare.

The first operation for the cure of club-foot was performed in the year 1784, by a surgeon named Lorenz, upon the recommendation of a physician named Thilenius (of Frankfort), who has the honour of having first proposed tenotomy as a means of curing this affection. The mode of operating was by a simple incision, involving the skin and all the subjacent tissues, the wound healing in about seven weeks, and a perfect cure resulting from the treatment. Similar operations were performed afterwards by Sartorius and Michaelis with more or less favourable results, and we come then to the year 1816, when Delpech, the illustrious surgeon of Montpellier, made the first approach to the subcutaneous method as now practised, by transfixing the limb beneath the tendo-Achillis, and dividing the latter from within outwards, taking care to leave the skin uninjured over the divided extremities of the tendon. Delpech operated but once, and no further attempt is recorded until 1831, when Stromeyer, of Hanover, made another improvement by dividing the tendon through a "puncture" without external incision. Among the earlier followers of Stromeyer in establishing subcutaneous tenotomy as a recognized and legitimate operation, are to be named Dieffenbach, Bouvier, Pauli, Duval, J. Guérin, Bonnet, and Scoutetten. The first operation in England was performed in 1836, by Mr. Whipple, of Plymouth, though to Dr. Little is due the credit of publicly introducing the new mode of treatment to the profession of London in the following year.

Such is the history of subcutaneous tenotomy. Mr. Adams, however, properly gives to Hunter the credit of having enunciated the law "on which," in the words of Mr. Paget, "is founded the whole practice of subcutaneous surgery."

Chapter second treats of "the reunion of tendons after subcutaneous tenotomy, and the rate of extension after operation in the treatment of club-foot." A full account is given of the experiments which have been performed at different times by various observers with the intention of determining the mode of union of divided tendons, and secondarily the *modus operandi* of tenotomy. The ordinary view, held with slight variations by Stromeyer and by Messrs. Tamplin and Brodhurst, is that the connecting medium, whatever may have been its original length, gradually contracts until it becomes a mere linear cicatrix, the English authorities named believing that in this process of contraction the muscle is mechanically stretched and elongated, while Stromeyer, holding likewise to the view of muscular elongation, attributed it to a diminished power of contraction supposed to be brought about by a dynamic influence exerted by the division of the tendon.

Mr. Adams has not only experimented himself upon the division of tendons in the lower animals, but has published the results of fifteen *post-mortem* examinations which he has been enabled to observe in cases of patients who had been operated upon for club-foot, and who had died at periods of from four days to three years after the operation.

The opportunities for investigation thus afforded him have been so unusually ample, that we think it but right to reproduce his conclusions in full for the benefit of our readers. These conclusions are :—

"That tendon is one of the few structures of the body capable of reproduction or regeneration, and that the newly-formed tissue acquires within a few months of its formation the structural characters of the old tendon so perfectly, that, under the microscope, it is with difficulty distinguishable from it; but it does not acquire through its substance the uniformly opaque, pearly lustre of old tendon. In the mass, the new connective tissue retains a grayish translucent appearance, so that the recent section affords an easy method of distinguishing the new from the old tendon.

"The greatest length of perfectly formed new tendon which I have seen, is two inches and a quarter, and this was in the tendo-Achillis of a girl aged ten. The tendon had been divided by Mr. Curling a year and a half previous to amputation of the limb.

"That the process by which new tendon is formed is essentially similar in animals and in man.

"That the perfection of the reparative process is in direct proportion to the absence of extravasated blood and inflammatory exudation; and

"That the sheath of the tendons, when consisting of loose textured areolar tissue, as in the tendo-Achillis, and other tendons surrounded by soft tissues, is of importance,

"1st. In preserving a connection between the divided extremities of the tendon;

"2d. In furnishing the matrix in which the nucleated blastematous or proper reparative material is effused; and

"3d. In giving definition and form to the newly-developed tendinous tissue.

"That the new tendon always remains as a permanent tissue, and as an integral part of the tendon, the divided extremities of which it has been formed to reunite. . . . . . .

"The average length of new tendon formed in children operated upon for club-foot, to reunite the divided extremities of the tendo-Achillis, appears from my observation to be from half an inch to an inch, and in adults from one to two inches. . . . .

"From my observations it appears that in the cure of deformities, muscles are elongated by the increased length of their tendons, obtained by means of subcutaneous division and the development of new tendon formed for the purpose of reuniting the divided extremities of the old tendon. . . . .

"Complete failure of union I have witnessed only in the posterior tibial tendon, and it appears that there is considerable risk of such an occurrence whenever tendons are divided in or near to dense tubular sheaths.

"Imperfect union may result either from some constitutional defect in the reparative powers of the patient, or from injudicious after-treatment in a variety of ways, but principally from too early and too rapid mechanical extension.

"When recontraction of the foot takes place, and the deformity returns at a distant period after tenotomy, this does not depend upon absorption of the new material, or new tendinous tissue formed previously to unite the divided extremities of the old tendon, but upon structural alterations taking place in the muscular tissue.

"In three relapsed cases of deformity of the foot which I have examined, the new tendinous tissue formed, after the previous operation, remained, and could easily be distinguished from the old tendon; these facts must be regarded as additional evidence against the linear cicatrix theory." . . . . .

In one case "the deformity (talipes equinus) had returned a year and a half after the Achilles tendon had been divided, and yet two inches and a quarter of new tendinous connecting tissue could be distinctly seen in the Achilles tendon."

The rate of extension after tenotomy should vary with the peculiarities of each case. In every instance the foot should be kept for a few days after the operation in the original deformed position. The gradual restoration to the normal position should then be begun, the rapidity of restoration depending upon the activity of the reparative process, though in practice it is frequently limited by the ligamentous rigidity of the joint. In well nourished infants the time required for the tendo-Achillis is, according to Mr. Adams, about two weeks; in a well nourished adult limb, from three to four weeks; but, in atrophied paralytic limbs, not less than five or six weeks.

> "The object of gradual extension is not so much to elongate or stretch the new material uniting the divided extremities of the tendon, as generally supposed; but rather to regulate the length of new material, or, as it may be called, the new tendon, while we have the opportunity of so doing, *i. e.*, during the period of its formation or regeneration; and the rate at which this is to be accomplished must have reference to the activity of the reparative process, and the length of new tendon required."

In cases of paralytic equinus, if there be not much articular rigidity, too rapid extension may develop the opposite condition of calcaneus; while, on the other hand, if the ligamentous rigidity be excessive, it may be in some cases necessary to divide the tendon a second time in order to obtain the required amount of elongation.

In chapter 3d are discussed "the relative merits of tenotomy, and the stretching of muscles and other tissues, by mechanical means, in the treatment of club-foot." In this chapter our author enunciates the principle which is demonstrated by the reasoning of the whole volume, that most cases of club-foot require "a judicious combination of operative, mechanical, and physiological means" for their successful treatment, and refers in terms of reprobation to the doctrines advanced respectively by Prof. Syme and Mr. Barwell.

The eminent surgeon of Edinburgh teaches that tenotomy alone is sufficient to effect a cure, the foot being immediately placed in the desired position, and the patient required to exercise the limb by walking in a very few days. Mr. Barwell, on the other hand, rejects tenotomy altogether, and proposes to treat club-foot by a mechanical arrangement of splints and elastic cords. The language which Mr. Adams uses with regard to the opposing views of these gentlemen is unmistakably emphatic, and not particularly complimentary, though probably well deserved, as neither of them has been over modest in the promulgation of his own opinions. At any rate, and this is the most important point, Mr. Adams has, we think, conclusively shown the correctness of his own views, and the manifest incorrectness of those of his antagonists. Lord Byron, who suffered from congenital varus, was an illustrious example of the failure of mechanical means alone to effect a cure; and, except in slight cases, it is doubtful if a permanently successful result has ever been obtained without operative treatment. Certain it is, according to our author, that Mr. Barwell's "new method" is neither new nor original with Mr. Barwell; moreover, it had been tried and rejected as a failure, in St. George's Hospital, several years before the publication of Mr. Barwell's book.

With regard to Mr. Syme's doctrine, "the true answer," says Mr. Adams, "is, that in severe cases tenotomy alone will not enable us to restore the form of the foot, in consequence of the adapted shortening of the ligaments; and in slight cases the danger of non-union, or excessive elongation of the new connecting material, should deter any surgeon from adopting Mr. Syme's recommendation."

Many children are born with slight inversion of the feet; in these the deformity can generally be remedied by "manipulation" alone, assiduously practised by the mother or nurse. Another large class of cases may be cured either with or without operation, though, as tenotomy will diminish the time required in treatment, it will sooner allow the muscles to obtain their proper physiological development, and may therefore be advantageously employed in many cases of this class. In cases of a still more severe nature, tenotomy is absolutely indispensable.

> "The following," says Mr. Adams, "are the indications upon which we must rely in determining the necessity of the operation: 1st, when the foot cannot be fully everted or brought to a straight line with the leg by manipulation, and when, in the attempt to accomplish this, the inner malleolus does not become prominent. 2d. When the os calcis either cannot be depressed at all, or only to a slight degree, so that, after the partial eversion of the foot, little or no flexion at the ankle-joint can be obtained."

The above remarks and rules, which are given in reference to congenital talipes varus, are equally applicable, *mutatis mutandis*, to all other varieties of club-foot.

Chapters 4th and 5th are devoted to a consideration of the general pathological conditions under which the majority of cases of club-foot are found to occur. The non-congenital cases constitute about three-fifths of the whole number, and with a discussion of their pathology the present portion of the volume is occupied—the pathology of the congenital varieties being reserved for that devoted to congenital varus, which is by far the most important form of club-foot.

Nine-tenths of all non-congenital cases depend upon either muscular spasm or muscular paralysis; but, although the structural changes vary according to the cause (in spasmodic cases the minute anatomy of the muscles being almost unaltered, while in paralytic cases fatty degeneration begins early and progresses rapidly), yet a practical difficulty is found in distinguishing them: for in paralytic cases, in the adult especially, the muscles may be rigid or flaccid at different periods in the same case.

Hence our author finds it more convenient to divide all these cases into four classes, viz :—

> "1st. Deformities with rigid muscles; the rigidity or tonic muscular contraction remaining as a persistent condition from the time of seizure. All non-congenital, and generally infantile affections.
>
> "2d. Deformities with rigid muscles; the rigidity or tonic muscular contraction being consecutive to a flaccid and paralytic condition of the muscles. All non-congenital, and generally occurring in the adult.
>
> "3d. Deformities with flaccid muscles; the contractions depending upon position and adapted muscular atrophy. All non-congenital, and generally infantile affections, or occurring in early childhood.
>
> "4th. Deformities with the muscles in a healthy or nearly healthy condition. These are cases in which the paralysis has been more or less completely recovered from, but the deformity produced by contraction during the stage of paralysis remains as a persistent condition. All non-congenital, and generally occurring in early childhood."

The symptomatology, morbid anatomy, prognosis, and treatment of each of these classes is then discussed at some length. Dr. Radcliffe's views upon nervous action and muscular contraction (according to which muscles contract by an inherent property of their own, upon the withdrawal of the nerve stimulus which prevents their contraction) are referred to with a qualified approval.

The prognosis of the first class of cases is decidedly unfavourable when the cases are severe; they can, however, often be much benefited by a combination of the three methods of treatment—the operative, the mechanical, and the physiological.

The prognosis of the second class (that where rigidity follows paralysis) is also unfavourable, because, though the deformity may be cured, the defective voluntary power will remain, and because, as a rule, many muscles are involved. Still, even in cases of hemiplegia in the adult, much comfort may sometimes be afforded to the patient by judicious tenotomy. "The most favourable condition which can exist is the comparatively healthy condition of the muscles surrounding the hip-joints."

A discussion of the third class of cases (deformities with flaccid muscles) involves a short account of "Infantile Paralysis, and its Peculiarities, as compared with Paralysis in the Adult." This account, which occupies only eight pages, we would especially commend to our readers as eminently clear and satisfactory. When cases of infantile paralysis do not terminate in spontaneous recovery within a few months, the resulting deformities will generally become permanent, and can then be greatly ameliorated by surgical interference. "In all these cases the treatment essentially consists in the removal of existing deformities by tenotomy and mechanical means, and a subsequent compensation for the existing paralysis by mechanical support, varying in different cases according to the extent of the paralysis." Fortunately, in these cases, the muscles of the hips are usually unaffected.

Cases of the fourth class (where the muscles are in a healthy condition after recovery from paralysis) are the most favourable that are met with in practice; in them can be removed not only the deformity, but not unfrequently all traces of lameness.

Chapters 6th and 7th treat of Talipes Equinus. This is very rarely met with as a congenital affection; in fact, Mr. Adams has seen but three such cases, and even in them the evidence of the existence of the deformity at birth was not absolutely conclusive. On the other hand, talipes equinus is by far the most frequently met with of all the non-congenital deformities, constituting, according to Mr. Tamplin's statistics, about 40 *per cent.* of the cases occurring after birth, and $22\frac{1}{2}$ *per cent.* of the entire number of cases of club-foot. Mr. Lonsdale's statistics place the proportion still higher—he and Mr. Adams having found 170 cases of talipes equinus in a total of 495 [$34\frac{1}{3}$ *per cent.*] treated at the Royal Orthopædic Hospital in three years.

The various causes of this deformity are discussed at some length, and with great fairness and candour. The prognosis may be considered as always favourable as regards the removal of deformity, except in the very rare cases in which bony anchylosis has taken place; but as regards the recovery of use of the limb, the prognosis must, of course, vary with the cause and duration of the malady, and the structural changes that may have taken place.

The operative treatment consists of the division of the tendo-Achillis, and in severe cases of the plantar fascia as well: it is generally better to divide the latter (when necessary) as a preliminary operation, thus securing the immobility of the posterior extremity of the arch of the foot (which will be held firm by the rigid tendo-Achillis) and so materially facilitating what is called the expansion or unfolding of this arch. Severe contractions of the toes frequently coexist with talipes equinus, but are usually remedied by the section of the Achilles tendon alone, though, if necessary, the extensor or flexor tendons of the toes, or both, may be likewise divided.

Mechanical extension should be begun on the third day after the operation in cases of infants, and in those of adults where the nutrition of the leg is unimpaired. In paralytic cases it may be advisable to wait a few days longer. The apparatus employed is a modification of that originally introduced by Scarpa, and still known as Scarpa's shoe. The alterations which have been introduced by Mr. Adams himself seem to us great improvements. They have been made after a careful consideration of the morbid anatomy of the deformity, and of the changes of form which must take place in the process of cure. The most important of these alterations seem to us to be the introduction of a transverse division in the sole plate, corresponding to the transverse tarsal joint in the foot, and the bringing the heel-strap directly backwards through an aperture in the heel-plate and sole instead of transversely across the front of the large heel-plate used in the ordinary forms of the apparatus.

The *physiological* treatment consists principally in the judicious employment of passive motion, which should be begun when the required length of new tendon has been obtained, or, in cases of ligamentous rigidity, even during the latter periods of mechanical extension. Remarks upon Talipes Equino-varus and Talipes Equino-valgus conclude the seventh chapter.

Chapters VIII. to XVII. inclusive are devoted to Talipes varus, all but the last of these treating of the congenital variety. It is not our intention to attempt an analysis of this portion of Mr. Adams's book, for it would be impossible to do it justice in the narrow limits of a review. The author has here displayed a familiarity with the literature of his subject, as well as a thorough acquaintance from personal observation and study with the pathology and morbid anatomy of the deformities of which he treats, which must always make his work an authority of the highest importance. We shall content ourselves with noting a few points which appear to us of especial interest on a careful perusal of the volume, and refer our readers to the book itself as a most admirable exposition of the whole subject under discussion. We find on page 126 a convenient diagnostic sign for distinguishing the congenital from the non-congenital forms of varus. In the former variety there are "two deep furrows, one taking a longitudinal, and the other an obliquely transverse direction," which "may with certainty be relied upon. In non-congenital cases they are either absent or but slightly marked." This is important with a view to prognosis, for in the congenital form there is little or no muscular degeneration, while in the non-congenital, fatty degeneration in the muscular tissue rapidly advances, and the prospect of successful treatment is of course greatly diminished.

A fact which should be remembered is that the *bones* in cases of varus are found to be altered both in relative position and shape. "It may . . . be looked upon as an established fact, that in a severe case the astragalus is considerably malformed at the period of birth" [page 141]. This osseous malformation appears to result from the pressure of the adjacent bones during the latter part of their intra-uterine growth, and it is rendered probable that by an early restoration of the foot to its normal position the subsequent growth and ossification of the astragalus would occur with a gradual return to its proper form; hence a cogent argument in favour of early operations in these cases. "It is advisable," says Mr. Adams, "that the operation be performed as soon after the first month from the period of birth as the circumstances of the case permit, having special reference to the healthy condition of the child and mother. Practically, I find that the most favourable time for operation is when the child is about two months old."

In considering the etiology of congenital talipes varus, our author gives at length the various arguments for and against the respective theories of its spasmodic origin, and of its causation by malposition and pressure *in utero*, and then declares his adhesion to the former hypothesis as being the more satisfactory and the more tenable.

A curious instance of hereditary transmission of talipes varus is given on page 200.

From Mr. Tamplin's tables, before referred to, we learn that of 764 cases of congenital club-foot, no less than 688, or 90 per cent., were of talipes varus. Both feet were affected in 363 of the 688, the right foot alone being involved in 182, and the left foot alone in 138. The remaining five were of a compound nature.

One of the most alarming accidents that can occur in the operation of tenotomy is the wounding of the posterior tibial or the internal plantar artery, the former vessel being sometimes cut in the division of the tibialis posticus tendon, and the latter in the division of the plantar fascia. Pressure, if immediately applied, is generally sufficient to effect a cure, but several cases are on record where the accident has been followed by the formation of a false aneurism. Mr. Adams has met with four such cases himself—three in his own practice and one in that of Mr. Tamplin. In the latter, and in two of his own, recovery followed the use of pressure, but in the remaining instance, which occurred in 1853 (the posterior tibial being the artery involved), pressure produced a slough (in consequence of the mother's neglect), and the child being exhausted by two profuse hemorrhages, Mr. Adams injected five or ten drops of the concentrated solution of the perchloride of iron, as recommended by M. Pravaz of Lyons. The result was a complete success, the treatment of the deformity being afterwards continued : " the restoration of the foot was in a few weeks as complete as in other cases."

The tendons of the contracting muscles having been divided, the mechanical portion of the treatment demands attention, and the objects of this must be :—

> "1. To insure the requisite elongation of the contracted and shortened muscles, by regulating the length of the new tendon formed during the reparative process after division.
>
> "2. To replace or reconduct to their normal positions the displaced bones.
>
> "3. In accomplishing the second object, to elongate the contracted and shortened ligaments.
>
> "4. To retain the bones in their normal relations, and to encourage the use of the joints in their natural directions, so that as growth proceeds, assuming the treatment to be undertaken in childhood, the bones may improve in form, and the muscles be brought into exercise with the view of promoting their structural development and physiological perfection."

The mechanism of talipes varus, and the corresponding mechanism of its treatment are fully explained by our author, and several forms of apparatus described and figured, which he has found particularly useful. And here we must again commend the ingenuity and practical good sense manifested in the design and construction of these instruments. They are, we think, better adapted to accomplish their purpose quickly, permanently, and *with comfort to the patient*, than any others with which we are acquainted. It would be impossible to give a correct idea of these instruments by mere verbal description, unaccompanied by the illustrative drawings, and we must therefore refer our readers to Mr. Adams's volume itself, where they will find a full and lucid account of the various apparatus required.

The probable duration of treatment necessary in cases of varus is an important matter for the surgeon to bear in mind, as he will probably be questioned upon this point by the friends of the patient. In general terms the time required may be said to vary with the age of the child and the amount of ligamentous rigidity. "In severe infantile cases the deformity may generally be removed in from two to three months. In children from five to ten years of age, the time will vary from three to six, or eight months, according to the ligamentous rigidity which the feet may present." Even in adults "very few cases will . . . . be found requiring a longer period than a year, if the instrument . . . recommended be employed. This apparatus is calculated to shorten the duration of treatment in adult cases, but this will depend very much upon the amount of attention given to all the details of treatment by the surgeon himself."

Some cases of club-foot relapse, a longer or shorter time after their supposed cure, and this has naturally tended to throw great discredit upon the means employed in treatment. And hence it is very important to ascertain the causes of relapse, and upon this point great diversity of opinion has prevailed among writers on the subject.

> "The principal causes of relapse," says Mr. Adams, "which I recognize in the ordinary cases of varus, when submitted to treatment at a sufficiently early period, have reference to some defect either in the primary or in the after-treatment, and may be arranged under the following heads.
>
> "1st. Defects in the operative treatment, consisting of (*a*) omitting to divide one or more of the contracted tendons, or more correctly speaking, the tendons of contracted muscles; (*b*) incomplete division of tendons; (*c*) division of tendons in a wrong order; (*d*) inflammatory adhesions following clumsily performed operations, or some of the accidents, such as aneurism, etc., which may occasionally occur.
>
> "2d. Neglect or discontinuance of the after-treatment, either mechanical or physiological.
>
> "Other causes of relapse, however, undoubtedly exist, such as
>
> "3d. From the treatment not being commenced at a sufficiently early age.
>
> "4th. From congenital defects of muscular development, such as absence of the anterior and outer muscles of the leg."

In severe cases of relapse the treatment should be the same as if no previous operations had been performed.

If *congenital varus* is the most frequently met with of all forms of club-foot, the *non-congenital* variety is comparatively quite a rare affection. Mr. Tamplin's tables give but sixty out of 1780 cases (999 non-congenital) a proportion of but six *per cent.*, or three *per cent.* of the whole number. The deformity in cases of non-congenital varus can be easily remedied, but the prognosis, as regards the regaining of power, and general usefulness of the foot must be often very unfavourable. This is, of course, on account of the paralyzed condition of the muscles which usually exists in these cases, and the frequency of advanced fatty degeneration in the muscular structure. In some cases, especially where there is much ulceration of the foot from pressure, amputation, with the subsequent use of an artificial limb, may promise better than tenotomy and a long course of mechanical treatment. If, however, the latter be determined upon, the operation and subsequent treatment will not vary much from that adapted to cases of a congenital nature.

Chapters XVIII. and XIX. treat of talipes valgus, commonly known as splay-foot, or flat-foot. This deformity, like the others, may occur either as a congenital affection, or may be developed subsequently to birth. Splay-foot is perhaps the most painful and annoying of all the forms of club-foot;

for while patients are sometimes able to go through life, taking a considerable amount of active exercise even by walking, with a severe grade of talipes varus, a patient with valgus is generally incapacitated from walking more than short distances, and sometimes even from standing continuously for more than a very limited time.

The external characters, morbid anatomy, and pathology of talipes valgus are fully described by our author, and the remarks which we made concerning his chapters on varus, might be equally applied to this part of his volume. Congenital valgus is a very rare affection, Mr. Tamplin's tables giving but 42 cases of an uncomplicated form—a proportion of less than $2\frac{1}{2}$ *per cent.* of the whole number. The non-congenital cases, on the other hand, were 181, being a proportion of over ten *per cent.* The *prognosis* in cases of congenital valgus may always be favourable, except in a few instances where the deformity is associated with malformation of the bones of the leg. Very slight cases may be cured in infancy by manipulation or mechanical treatment: in those which are more severe division of the peronei and extensor longus tendons may be practised, and in many cases the tendo-Achillis, and in some even the tibialis anticus and extensor pollicis tendons must be divided as well. Relapse is infrequent in cases of valgus, and can usually be effectually prevented by raising the heel on the inner side of the boot, and by introducing a stiff piece of leather to support the arch of the foot, and, if necessary, inserting a steel-plate in the corresponding part of the sole of the boot, so as to prevent it from giving way under the superincumbent weight of the body.

Cases of non-congenital valgus may be arranged in six classes, according to the causes which produce the deformity. These are (1st) Valgus depending upon ligamentous and muscular debility, (2d) Rachitic Valgus, (3d) Paralytic Valgus, (4th) Spasmodic Valgus, (5th) Traumatic Valgus, and (6th) Valgus consequent upon disease of the ankle-joint or surrounding tissues. In cases of the first class the prognosis will always be favourable: in the others the result must be very doubtful, though considerable comfort and ease to the patient can always be afforded. Most cases of valgus from debility can be cured without tenotomy: in severe cases, however, it will generally be found that the duration of the treatment may be considerably diminished by the operation, and it may therefore be resorted to where time is an object for consideration. In the adult, and in cases resulting from other causes than debility, tenotomy will usually be required: in one case where both feet and both knees were contracted, Mr. Adams divided no less than twenty-two tendons. A few remarks on talipes equino-valgus, and talipes calcaneo-valgus conclude the chapter.

The twentieth and last chapter of the volume treats of talipes calcaneus, with its compound varieties calcaneo-varus, and calcaneo-valgus respectively. Congenital calcaneus is a very rare affection, Mr. Tamplin's tables, before referred to, giving but nineteen cases. The non-congenital variety, together with cases of calcaneo-valgus, are represented by a much larger number, to wit, 110.

The prognosis of congenital calcaneus is exceedingly favourable; in fact the process of walking tends to bring about a spontaneous cure, which accounts for the disease never being met with in adults. Recovery may, however, be hastened by tenotomy in severe cases, and the tendons which then require division are the tibialis anticus, extensor proprius pollicis, extensor longus digitorum and peroneus tertius.

Non-congenital calcaneus generally is the sequel of infantile paralysis;

it may, however, be caused by non-union, or imperfect union of the tendo-Achillis after division, or by the contraction of a cicatrix upon the front of the leg. In the paralytic cases, the prognosis must of course be unfavourable, and a perfect cure must not be anticipated. In a case where imperfect union of the tendo-Achillis was the cause of the deformity, Dr. Little introduced a tenotomy knife, and incised the divided extremities of the tendon, lacerating the insufficient uniting medium. By then retaining the foot in an extended position, plastic material was abundantly formed, and considerable shortening of the tendon was obtained. As a rule, however, the treatment of non-congenital calcaneus is very unsatisfactory. This chapter contains an interesting section upon the resemblance of non-congenital talipes calcaneus to the distortion of the foot, artificially produced amongst the Chinese.

An appendix of sixty-two pages gives an account of three specimens illustrating the condition of the muscles, bones, etc., in different forms of non-congenital club-foot, and furnishes full details of seventeen cases in illustration of the principles laid down in the body of the work. This appendix, though not the most important, is perhaps the most interesting portion of the whole book. A tolerably complete index of eight pages terminates the volume.

We have thus endeavoured to give our readers a succinct view of the principal points brought out in Mr. Adams' work, and to induce them to refer to the book itself for the information which they will not fail to find there. We have no doubt but that Mr. Adams' treatise will be recognized as *the* treatise (*par excellence*) upon club-foot. It is because we think this that we deem it but right to call attention to a few minor errors and deficiencies.

In the first place the literary composition of the work is somewhat inelegant: this is, of course, a small matter, but scientific writings are not less useful for not being unattractive. Then we find some contradictory statements and manifest errors in the text, which are obviously the result of carelessness, and should be corrected in a second edition. Thus we are told on page 333, that "Talipes calcaneus is the rarest form of congenital club-foot;" while from pages 87 and 88, we find that Mr. Tamplin doubted if Pes Equinus were ever congenital, and that Mr. Adams himself has never seen but three such cases, and is not absolutely certain as to the congenital origin of these. Again, Mr. Tamplin's tables, which are continually referred to, give, we are told, 764 cases of congenital origin, and 999 of non-congenital; the total being stated at 1780, thus evidently leaving 17 cases unaccounted for in either category.

Proper names of the authors quoted are frequently misspelt: thus the well-known co-labourer of Barthez is sometimes called *Reilliet*, and sometimes *Rielliet*, but never by any chance by his correct name *Rilliet*.

Finally, the misprints in the volume are numerous, and occasionally tend to obscure the meaning. As examples we may instance *asphixiated* for *asphyxiated*, *fascial* for *facial*, *tibialus* for *tibialis*, and "*the mare*" for "*them are.*"

The *matter* of Mr. Adams' book is excellent, and the illustrations are accurate and beautifully executed. By sparing time from his daily avocations to look after the particulars we have referred to, by smoothing off the asperities of his style, and by devoting more time and attention to proof-reading, our author will render his work as unexceptionable in all points as it even now is admirable in those which are most important.

J. A., Jr.

BIBLIOGRAPHICAL NOTICES.

Art. XVI.—*Transactions of American State Medical Societies:—*

1. *Transactions of the Medical Society of the State of New York, for the year* 1866. 8vo. pp. 422.
2. *Transactions of the Indiana State Medical Society, at its Seventeenth Annual Session, held at Indianapolis, May* 21 *and* 22, 1867. 8vo. pp. 132. Indianapolis, 1867.

1. The Annual Address, delivered at the opening of the Session of the New York State Medical Society for 1866, by the President, Dr. Henry W. Dean, of Rochester, is chiefly devoted to a sketch of the history of "disease, *pathological* and *psychological*, as typed and modified by civilization." The subject is one of deep interest, and considering the necessarily restricted limits of an address, a very fair sketch of it is given by Dr. D., and one that will be read with profit by his medical brethren.

In the *second article*, Dr. James E. Steel, of New York, presents an account of Embalming as practised in ancient and modern times, with remarks on its applicability to the preservation of anatomical and pathological specimens. Those who feel an interest in the subject of this paper, either in its historical or practical bearings, will, of course, desire to peruse the entire paper. No analysis within any reasonable compass would do it justice or convey any useful knowledge to our readers.

In *article third*, Dr. Edward R. Squibb, of Brooklyn, offers an ably sustained appeal for the materia medica. This all-important branch of the science and the art of medicine, has, according to Dr. S.'s conviction, in common with that of hygiene, "been so far outstripped by the progress of other branches as to have fallen into an unmerited disregard, if not contempt." As a means of remedying the neglect complained of, Dr. S. suggests that a committee of five, to be called the Committee on Pharmacology, be appointed by the New York State Medical Society to hold office until the annual meeting in 1871, whose duty it shall be, individually, "to accumulate knowledge upon medicinal agents and their application, and to report the results of their researches separately, through the chairman, annually to the Society." A special duty, also, of the committee shall be "to take charge of the interests of the Society in the United States Pharmacopœia, and to collect, arrange, preserve, and transmit all accessible (?) information and knowledge that may be useful in the next decennial revision of that work, in 1870."

Article fourth is the history of a case of "carbonaceous lungs"—death from wound of heart, by Dr. J. R. Boulware, of Albany. This case presents two points of some interest. First, in reference to the pathological condition of the lungs; and second, in showing the amount of injury that may be inflicted upon the heart without causing instant death. A man, aged twenty-eight years, weighing about 160 pounds, always strong and healthy, for the last ten years, and up to the day of his death, had worked regularly at his trade as a stove-plate moulder. On the night of his death, whilst in the second story of a neighbouring house, an altercation occurred during which he was wounded in the chest with some sharp-edged instrument. By the aid of his friends he was enabled to descend the stairs and walk to his own home, some eighty yards distant. When he arrived at his door he became exhausted, and had to be carried in, and up stairs. After which he conversed a little, answering some few questions. He died about twenty minutes after receiving the stab. On examining the thorax, fourteen hours after death, a penetrating wound was discovered, three-fourths of an inch in width, below the centre of the left clavicle, between the second and third ribs, and extending into the left pleural cavity. The intercostal artery was divided; lung uninjured. Left pleura contained about a pound and a half of coagulated blood, which had probably escaped from the divided artery. A second penetrating wound, three-fourths of an inch wide, was discovered on the left side, between the seventh and eighth ribs, two inches anterior to a line drawn vertically from the nipple. It extended upwards and backwards, through the pericardium and entered the cavity of the right ventricle of the heart near its apex, making a wound half an inch in width through its walls. In the pericardium there was about a pint of blood partially coagulated. The heart and vessels were free from disease. Both lungs were of a deep black colour—sections showed this dark colour pervaded the entire pulmonary tissue. When the cut surfaces were pressed, a copious exudation of a black fluid took place, which stained the paper and cloth in which portions of the lungs were wrapped, through several layers. It attached itself to the skin of the fingers, and insinuated itself beneath the nails, giving to the hands an appearance not unlike those of the moulder who is daily handling pulverized coal. Tissue of lungs apparently healthy. By a chemical examination it was shown that the black colour of these organs was due to the presence in their tissues of a large quantity of free carbon. It differed from the black pigment found in cells in cases of melanosis—it being unaffected by chlorine, acetic, nitric, or chlorohydric acids. The question presents itself, Was the carbon in the lungs in this case due to a carbonaceous secretion from the lungs; or was it not, rather, derived from the external air by inhalation? The patient, for ten years preceding his death, had breathed, in a moulding room, an atmosphere loaded with minute carbonaceous particles.

In *article fifth* Dr. L. McKay, of Rochester, treats of what he terms "the Gingival Margin," as a diagnostic sign. Some ten years ago Dr. T. Thompson directed attention to the *gingival margin* as a diagnostic sign in suspected phthisis, and Dr. McKay states that from a careful study of the subject he believes such margin to be a sign of great value in all diseases which result in a deficiency of the iron and certain solid elements of the blood. The gingival margin has a somewhat different appearance in different cases. In some it shows itself as a mere red line along the margin of the teeth; in others, it is a red and congested margin to the width of one-eighth of an inch, or it may extend even the whole depth of the gums; again, the margin appears red and spongy, and secretes a pus-like fluid; in other cases, the gums have a spongy appearance, and are, as it were, chiselled away from the edges of the teeth, showing their roots in a carious and filthy condition. Dentists very generally would seem to refer all these changes to the accumulation of tartar round the roots and along the margin of the teeth, which they dig and scrape off, and, according to Dr. McK., to the great injury of the patient.

If the case be seen when this margin is first discernible, by putting the patient on the use of iron and chlorate of potash, and continuing the remedy until the gingival margin disappears entirely, Dr. McK. declares that a permanent cure of the peculiar dyscrasia of blood under which the patient labours will be effected. If we find him the subject of some severe malady, no matter what may be its character, whether inflammatory, congestive, or scorbutic, still the system will require iron. This may, perhaps, at first, be contraindicated by the presence of fever, local inflammatory action, and the like acute affections; but after these have been reduced in intensity, the use of iron and a cordial and sustaining treatment will be demanded.

Article sixth comprises a series of "Obstetrical Statistics," from the practice of Dr. P. O. Williams, of Coxsackie. These statistics are drawn from the history, character, duration, complications, sequelæ, and the results, to mother and offspring of 804 cases of labour.

In *article seventh* a very interesting history is given by Dr. P. O. Williams, of Coxsackie, of a case of gunshot wound of the liver; in a soldier 28 years old, resulting in entire recovery. Dr. W. remarks that in this case, the excessive hemorrhage, as from a highly vascular organ, the sickness at stomach, the clay-coloured stools, the yellowness of the urine, the jaundiced skin, the flow of bile from the wound, and the accompanying peritonitis, were all incontestable evidences that there was a wound of the liver; while the locality of the wound, and the increased flow of bile, some fifty-three days after its infliction, and for three or four days subsequently, were strong indications of lesion of the right hepatic duct. The ball in all probability passed in such close proximity to that duct as to disorganize its tissues, followed by sloughing, and, through the orifice thus formed, the bile flowed from its portal ramifications, as also by regurgitation from the gall-bladder. The patient was discharged cured on the 106th day from the receipt of the wound.

Article eighth is an inquiry relative to the subject of "The Formation and Expectoration of Fibrinous Bronchial Casts," with the history of an illustrative case, by Dr. Stephen Rogers, of New York. Though this paper is not without interest, this interest consists rather in the suggestive character of the several facts and considerations adduced by Dr. R. than in the establishment of the views advanced by him in respect to the true character of that form of pulmonic disease, which, we suspect, is not of very frequent occurrence, that is attended with the expectoration of fibrinous casts of portions of the bronchial tubes and their ramifications, and differing from each other in size in the same or in different cases. Dr. R. believes that one, if not the most frequent cause of exudative bronchial inflammation, accompanied usually by the expectoration of these fibrinous casts, is what Dr. T. H. Buckler has denominated *fibro-bronchitis*—that is an inflammation of the fibro-cartilaginous tissue of the bronchial tubes without implicating primarily their mucous membrane; the disease partaking of a true rheumatic character.

Article ninth. Cases in "Ophthalmic Surgery," by Dr. H. D. Noyes. The first of these cases was one of "*total loss of the iris by injury.*" The most interesting feature in this case is that the patient recovered his sight, and by the use of a convex lens of eighteen inches focus, covered, with the exception of a narrow horizontal slip at its centre, with opaque black varnish and fitted up gogglewise, was able to read. While the use of a concave lens of twenty-four inches focus, similarly varnished and fitted up, enabled him to walk about and attend to the business of his farm. The second case is one of dislocation of a cataract within the anterior chamber, by a blow; its extraction, and the patient's recovery. The third case is one in which deformity from *divergence* of the right eye, the result of an unskilful operation for *strabismus convergens* performed some twenty-four years previously, was entirely removed by an operation.

In *article tenth* Dr. A. Marsh, of Albany, relates a case of lodgment and exit of a biliary calculus below the crest of the ilium, about midway between the anterior superior process of the ilium and the sacro-iliac synchondrosis.

Dr. March relates another case of the retention of a gall-stone of large size in the rectum for probably many years, in consequence of a stricture of the intestine. There was obstinate constipation of many years' continuance; finally symptoms set in not unlike those of strangulated hernia. Entire recovery ensued soon after the stricture was dilated and the calculus discharged.

In *article eleventh*, Dr. J. P. Gray, of Utica, treats of "general paresis," or incomplete progressive paralysis, illustrated by cases.

In *article twelfth*, Dr. J. E. Taylor describes a new method of operating in cases of "recto-vaginal and recto-labial fistula." The operation consists in a full and complete division of the whole sphincter ani, laterally, either with the use of the speculum ani, or simply by the finger introduced; the sphincter being divided from within outwards. If the fistula be double, then the sphincter should be divided on both sides. Dr. T. remarks that in all the cases operated on by him, the sphincter ani closed up well and remained perfectly natural.

In the *thirteenth article*, Dr. E. R. Peaslee presents a remarkably clear account of retroflexion of the unimpregnated uterus, its mechanism, predisposing and direct causes, with its effects, its complications, and its treatment. In the local treatment of retroflexion of the uterus, to retain the organ in its place after reposition, Dr. P. depends entirely upon the use of intervaginal pessaries of appropriate form and construction, and properly applied. Of such as he approves, diagrams are given.

In *article fourteenth*, Dr. E. H. Parker, of Poughkeepsie, gives some of his "Experiences in the use of Ether as an anæsthetic." These experiences are adverse to the article; Dr. P. bears, if not direct, at least indirect testimony to the superiority of chloroform as an anæsthetic.

In *article fifteenth*, Dr. G. Buck, of New York, describes a case of destruction of the body of the lower jaw, and extensive disfiguration of the face from a shell, with the nature and results of a reparative autoplastic operation. The account of this case deserves a careful study on the part of every one engaged in the practice of plastic surgery.

In *article sixteenth*, Dr. Wm. Gilfillan relates two cases of excision—one of the shaft of the humerus, and one of the elbow-joint.

In *article seventeenth*, Dr. G. T. Stevens, of Albany, treats generally of the question of excision in cases of gunshot wounds.

We have in *article eighteenth*, the account of a case of "acute enteritis," treated mainly by large doses of opium, occurring in the practice of Dr. B. G. McCabb, of Sullivan County. The amount of opium administered in this case, in fourteen consecutive days, was three hundred and ninety-two grains; averaging one and one-sixth grains an hour, or twenty-eight grains a day.

A description of a case of chronic hydrocephalus, with a photographic bust of the child, when seven years five months and ten days old, is given by Dr. H. S. Downs, of New York, in *article nineteenth*. We see nothing in this case especially worthy of notice.

In *article twentieth*, an account is given of the "Sanitary condition" of one of the plague spots of the city of New York—Fish Alley and its surroundings—by Dr. W. F. Thoms. The picture of the locality indicated presents an appalling array of badly constructed, filthy dwellings, so overcrowded with tenants as to afford to each one residing above ground, for respiration, an average of five hundred and forty-two cubic feet of stagnant, impure air, and to those living in cellars of three hundred and ninety-two cubic feet; of accumulated filth of almost every description; of dissipation and crime, and of diseases and deaths. It is all important, that in all large cities where similar localities are sure to abound to a greater or less extent, there should be a properly constituted sanitary police, whose duty it should be to search them out, and to take prompt measures to effect a thorough and permanent reform of their unsanitary condition.

In *article twenty-first*, Dr. A. Bolter, of Ovid, describes a case of congenital hypertrophy of the tongue in a female; causing, in her third year, the organ to protrude considerably beyond the lips, producing much inconvenience and distress to the patient, and no little deformity. A portion of the tongue, one inch and five-eighths in length, one inch in vertical thickness, and five inches and five-eighths in circumference, was removed by the knife. The recovery of the child was very rapid, and the improvement in her appearance striking.

Article twenty-second is devoted to a consideration of the provision for the insane poor of the State of New York, and the adaptation of the "Asylum and cottage plan" to their wants, as illustrated by the history of the colony of Fitz James, at Clermont, France, by Charles A. Lee. This is a most instructive and important paper, worthy of attentive study.

In *article twenty-third*, Dr. B. D. Carpenter, of Long Island, presents an account of tetanus, its pathology, etiology, and treatment, which contains but little that is perfectly new. The chief dependence of Dr. C. for the control of tetanus, is upon the application of ice to the head and spine. In illustration of the plan of treatment and its results, the details of four cases occurring under his care are appended.

Article twenty-fourth is a continuation of an essay on "*Diploteratology*," or compound human monsters, the first part of which appeared in the volume of *New York Transactions* for 1865. It is by G. J. Fisher, M. D., of Sing-sing. Taken as a whole, this essay constitutes a very full and complete exposition of the history, literature, classification, description, and embryology of double and triple formations, including the so-called parasitic monsters, *fœtus in fœtu*, and supernumerary formations of parts or organs in man. The entire article constitutes a very complete and able monograph of *diploteratology*, The study of these specimens of arrest or excess of development, of irregular development, of the fusion of two or more fœtuses, or, of the parts of different fœtuses in utero, may, possibly, lead to very important results. By their accurate classification and careful comparison individually, or of groups of individuals having a correlation with each other, we may gain valuable information in respect to the physiology of intra-uterine life, and in this manner may possibly develop means for the prevention of some, at least, of the more prominent of the abnormalities in the development and growth of the human fœtus. Dr. F. deserves great credit for the industry with which he has collected his materials, and the good use he has made of them. We wish he may be induced to publish the essay, with its copious lithographic illustrations, in book form, so that it might become accessible to the members of the profession generally.

In *article twenty-fifth*, Dr. S. O. Vanderpool, of Albany, gives the history of a case of "progressive locomotor ataxy," or more definitely, "*a lack of muscular coördination.*" The account of the case is followed by some very pertinent remarks on the probable pathological character of the disease.

The remaining articles—the twenty-sixth to the thirty-third, inclusive, are devoted to biographical sketches of deceased members of the Society, namely: Dr. Valentine Mott, who died April 26, 1865, in his 80th year. Dr. William Bay, Albany, who died September 7, 1865, in the 92d year of his age. Dr. Thomas W. Blatchford, who died January 7, 1866, in the 72d year of his age. Dr. Sylvester D. Willard, who died April 2, 1865, in his 40th year. Dr. David S. Conant, who died October 8, 1865, in his 40th year. Dr. C. R. Gilman, who died September 26, 1864, aged 62 years. Dr. A. B. Conant, who died December 22d, 1864, aged 62 years. Dr. Simeon Snow, who died September 20, 1865, aged 63 years.

2. *The Seventeenth Session of the Indiana State Medical Society* was opened by an address from the president, Dr. Vierling Kersey, of Richmond, Ind., on the subject of "Physic and Physicians." The remarks of Dr. K. are, upon the whole, appropriate, manly, and practical; having especial reference to the condition of the healing art, and the character and condition of its practitioners and cultivators throughout the State of Indiana.

The first of the professional papers is by Dr. JAMES F. HIBBERD, of Richmond, Ind. Its subject is an indication of the correctness of some positions succinctly stated in a communication made to the Society by Dr. H. two years ago, in respect to the *biliary secretion*, and which, last year, were assailed by Dr. Kersey, as not being in accordance with the teachings of science.

The positions defended by Dr. H. are 1st. That bile is secreted from the arterial blood brought to the liver by the proper hepatic artery—the portal blood not being necessary to its formation. 2d. That the bile is not simply excrementitious, though as to the destination and office of its different ingredients we are, as yet, in a great measure ignorant. 3d. That the coloration of the feces is not due to the presence of bile, or of its colouring matter, but to a pigment derived from many sources—from the intestinal follicles, from blood, from divers drugs, and from various articles of diet. The stools have been clay coloured for weeks when the bile was, as far as could be determined, regularly and fully secreted, while, on the other hand, they have, confessedly, presented all the so called bilious appearances, when it was certain that no bile passed into the intestinal canal. 4th. That no positive evidence that mercury exerts any cholagogue effects has as yet been adduced. The evidence presented by Dr. H. in proof of the accuracy of the foregoing propositions is certainly not conclusive; it is, nevertheless, we admit, of a weight and character sufficient to throw not a little doubt on the correctness of the commonly accepted opinions.

The next paper is "A Contribution to the Statistics in relation to Foreign Bodies in the Air-Passages," by Dr. J. R. Weist, of Richmond, Ind. A number of tables are presented, giving the details of one hundred and sixty three cases, of which 34 have been collected from medical journals, all occurring since the appearance of Dr. Gross' work in 1854; the remaining 129 cases have been collected by Dr. W. from the medical gentlemen whose names are appended to the respective cases. In the first table, 61 cases—34 males, 27 females—are reported, in which the foreign body was expelled, and the patient recovered without operation. The ages of the patients were, under one year of age, one;

under 2 years, two; under 5, eighteen; under 10, eighteen; under 15, nine; under 20, four; the remainder were aged, respectively, 23, 24, 26, 30, 40, and 60. Of three the age is not given. The foreign body in 12 cases was watermelon seed; in 10, grain of corn; in 5, coins; in 3, coffee-grains; in 3, portions of bone; in 3, bean; in 2 carpet-tack; and in 21, respectively, bullet, piece of pipe stem, persimmon seed, portion of cabbage stock, pea, nail, piece of slate pencil, bicuspid tooth, sewing needle, piece of egg-shell, piece of chestnut shell, artificial tooth, brass clock wheel, crumb of bread, piece of hickory-nut shell, piece of acorn, common pin, cockle burr, burdock burr, small button, cherry stone, fish bone, glass bead.

The length of time the foreign body remained in the air-passages, with the exception of one case, was from two hours to two years. In the exceptional case, two watermelon seeds were lodged in the trachea; one remained three, the other five years.

The mode of expulsion is stated in all but two cases; namely, by coughing in 40; by coughing while head was lowered and body inverted, 5; while vomiting, 2; while sneezing, 1; by violent expiratory effort while lifting, 1; by aid of forceps, 3; by forceps with aid of laryngoscope, 2; by loop of wire, 1; by probang, 3; by probang armed with threads of silk (case of brass clock wheel), 1. In one of the cases tracheotomy was attempted two weeks after accident, but was abandoned before opening trachea, because of hemorrhage. The foreign body, a grain of corn, was expelled by coughing, three months subsequently.

The *second* table contains a report of 20 cases—8 males, 12 females; not operated on, foreign body not expelled; termination, fatal. Patient in 1 case, under one year of age; in 4, under two; in 10 under five; in 4 under ten; and in 1 the age was forty-four. The foreign body was in 5 cases a grain of corn; in 3, a bean; in 1, a bean and grain of corn; and in the remaining cases it was respectively, a watermelon seed, piece of hickory-nut shell, bone pencil top, honey locust bean, piece of acorn, piece of turnip, piece of walnut kernel, apple seed, cockle burr, pea, piece of walnut shell.

The time of death varied from 15 minutes to 16 hours after the accident, in 6 cases; from 5 to 10 days in 4 cases; from 2 to 6 weeks in 4 cases; from 6 weeks to 5 months in 4 cases. In one case death did not occur until the end of 6 years. In one case the period is not stated. Suffocation is set down as the cause of death in 13 cases; exhaustion in 2; and bronchitis in 1. In 4 cases, the cause of death is not given. In one case an effort was made to expel the foreign body by inverting the body of the patient, when the offending substance, a piece of walnut shell, fell into the glottis, causing death in two minutes.

The *third* table contains a series of 48 cases—28 males, 15 females; not noted, 5, in which tracheotomy was followed by expulsion of foreign body and recovery of patient. Two of the patients were under 1 year of age; two under 5; five under 14; ten under 17; and six under 20. The age of the others was respectively, 25, 30, 54, and 60. Of one the age is not given. The foreign bodies in 7 of these cases was a grain of corn; in 6, a bean; in 4, a grain of coffee; in 3, a prune stone; in 2, watermelon seed; in 2, a cockle burr; in 2, a piece of egg shell; in 2, a piece of chestnut shell; in 2, persimmon seed; it was in the remaining 18 cases respectively, portion of tracheotomy tube, piece of peanut shell, pebble, piece of bone, piece of slate pencil, glass bead, piece of quill, hawberry, tamarind stone, copper cent, brass whistle, piece of cartilage, honey locust seed, piece of fish bone, stone from finger ring, small watch wheel, pawpaw seed.

The time of operating varied from four hours to twelve weeks after the accident. In 8 cases the foreign body was removed by forceps; in 12 by coughing; in the others the mode of removal is not stated. In 42 cases the foreign body was removed at time of operation. In three it was coughed up after closure of wound: in one at the end of three months; in another, after several months; in another at the end of ten months. In one case it was expelled by coughing, 3 days, in one, 7 days, and in one, two weeks after operation. In one case part of the offending body, a piece of cartilage, was removed at the time of operation, the remainder was coughed up two months later.

The *fourth* table comprises 19 cases—12 males, 4 females; in 3 sex not stated, in which *tracheotomy* was followed by death. Two were under 1 year of age; four under 2; eight under five; and three under 10. The other two were aged respectively, 22 and 23 years. In five of the cases the foreign body was a grain of corn; in 4, a bean; in 2, a piece of bone; and in the remainder respectively, a piece of nail, cherry stone, prune stone, pebble, grain of coffee, piece of nut shell, shirt button, and watermelon seed. The operation was performed soon after accident, or not until five weeks after. Death ensued during the operation in one case; soon after in 5; in four hours after, 3; in three days, 1; in a week, one; not stated in four cases. Cause of death in 6 cases, suffocation; in 2, pneumonia; in 1, gangrene of lungs; in 1, exhaustion; in 1, hemorrhage; in 1, œdema of glottis. In 7, the cause of death is not given.

The *fifth* table gives the particulars of 10 cases—5 males, 5 females—of *laryngotomy*, followed by expulsion of the foreign body and recovery of patients. One was under two years of age, and 4 under five years; one was 23 years of age; one, 30; and one, 32; of two the age is not stated. The foreign body in 2 cases was a cockle burr; in the others respectively, a grain of corn, a grain of coffee, piece of dried apple, piece of egg shell, a watermelon seed, and large sized tailor's needle. The time of operating varied from 18 hours to 10 weeks after accident. In all the cases the offending body was removed at the time of operating. In one case it was expelled from the wound by coughing; in three it was removed by forceps; in the other cases mode of removal not stated. In one case the foreign body was not found.

The *sixth* table gives the particulars of 5 cases of *laryngo-tracheotomy*, followed by expulsion of the offending substance, and the recovery of the patient. Three were males, one a female, and in one the sex is not given. The age of patients as given in four cases was 3, 7, 9, and 21 years. In four cases the operation was performed respectively, in 2, 4, 6, and 16 days; in one the time is not stated. In 4 cases the foreign body was removed at time of operation, and in 1, two days after. In 1 case it was expelled by coughing; in 2 it was removed by forceps; in 1 by fingers, and in 1, the method is not stated.

A "Report on Cholera" is presented by Dr. Geo. Sutton, of Aurora, Ind., which presents no feature of a novel or very striking character.

An essay on "The Collapsed Stage of Cholera," by Dr. W. S. Haymond, of Monticello, Ind., may be dismissed, with the same remark. In proof of his views of the pathology of cholera, namely, that the disease originates from the introduction into the alimentary canal of a morbid germ, which acts upon the intestinal mucous membrane as a local irritant, and upon the system, generally, as an absorbed poison, he has, certainly, not succeeded in collecting any legitimate evidence.

An account is given by Dr. J. Moffett, of "Cerebro-spinal Meningitis," as it has prevailed of late years, in the vicinity of Rushville, Ind. The account, though concise, is quite an interesting one. It, however, can scarcely be said to add anything to our knowledge of the disease.

The subject of "female," or more properly, women "doctors," is very concisely, but candidly discussed by Dr. Dougan, of Richmond, Ind.

A paper on "Tracheotomy in Cynanche Trachealis, Diphtheria, and Laryngitis," is contributed by Dr. R. E. Haughton, of Richmond, Ind. Statistics are given of 1024 cases of *croup*, in which tracheotomy was performed by various practitioners, chiefly of Continental Europe; a few, however, of the United States; the result was in recovery in 220 cases, that is 21.48 per cent. Statistics are also given in which tracheotomy was performed, chiefly, by French operators, in 509 cases of diphtheria, with 137 recoveries, or one in 37.9. The entire number of cases in which tracheotomy was performed, 1533; of these 137 recovered, or 23.28 per cent.

These statistics are unquestionably of great interest, though they by no means settle the important questions in regard to the value of tracheotomy in the treatment of diseases of the larynx and trachea, etc., the nature of the cases, and the period of the disease, namely, at which it may be performed with the greatest certainty of success.

A very good account is given by Dr. H. P. Ayres, of Fort Wayne, Ind., of "epidemic dysentery," as it appeared in Allen County, in the years 1845, 1854, 1856, 1864. In regard to the management of dysentery, Dr. A. very pertinently remarks, "In our observation, we have found the disease to differ in different years, and requiring hence a change of treatment. Here, we think, lies the reason of the great discrepancy in the treatment of this affection; the peculiar type or character has not been sufficiently attended to and defined, in which calomel, venesection, ipecac, opium, and the various remedies reputed as specifics, have been successful." D. F. C.

ART. XVII.—*Reports of American Hospitals for the Insane.*

1. *Of the Butler Hospital, for the year* 1866.
2. *Of the McLean Asylum, for the year* 1866.
3. *Of the Worcester Hospital, for the fiscal year* 1865–66.
4. *Of the Asylum for Insane Convicts* (*Auburn, N. Y.*), *for the fiscal year* 1865–66.
5. *Of the New Jersey State Asylum, for the year* 1866.
6. *Of the Mount Hope Institution, for the year* 1866.
7. *Of the Western Asylum of Virginia, for the fiscal year* 1865–66.
8. *Of the Longview Asylum, Hamilton Co., Ohio, for the fiscal year* 1865–66.

1. ON the 17th of January, 1866, Dr. Ray, in consequence of declining health, resigned his office of Superintendent of the *Butler Hospital for the Insane*, but, at the urgent request of the Trustees, he remained until a successor could be appointed, and did not leave until the 1st of January, 1867—the date of the report now before us. In a parting testimonial the Trustees say of him: "We recall, with grateful appreciation, his wisdom in council, his prudence and energy in administration, his high sense of official responsibility, his constancy and courage in times of difficulty, his rare self-sacrifice, and his devotion alike to the duties of his office and the interests of his profession, the valuable reports which, from year to year, he has laid before us, in relation to the causes, the phases, and the treatment of disease, and the still richer and more elaborate treatises in which he has presented its connections with education, with literature, and with jurisprudence; and we feel that to him, under the blessing of God, the hospital is principally indebted for the success it has achieved and the position it has attained."

	Men.	Women.	Total.
Patients in hospital, Dec. 31, 1865	66	65	131
Admitted in course of the year	31	13	44
Whole number	97	78	175
Discharged, including deaths	18	38	56
Remaining, December 31, 1866	79	40	119
Of those discharged, there were cured	—	—	24
Died	—	—	18

"During the months of August and September, many of the patients were attacked with a form of disease quite prevalent in the community around us—diarrhœa passing, in some cases, into dysentery. One, only, died of it, but it hastened the end of two or three others who would have shortly succumbed without it. With this exception, the health of the household has been good."

It is well known to all those who have read Dr. Ray's annual reports, or the notices of them in this Journal, that they have been medical essays—most excellent essays, too—rather than expositions of the operations of the hospital. So true is this that, in this, his last report, the Doctor occupies two pages in a justification of the course which he has pursued in that respect. "If," says he, "many of those which have emanated from this institution have seemed more like a special lecture than an annual report, treating of almost anything rather than the affairs of the hospital itself, I can only say that this seemed to me the best way of accomplishing the object in view—that of fixing the popular attention, not so much on the details of a hospital, the little machinery by which it is worked, as on those general principles of mental science, in its pathological relations, which seemed to be deducible from the observations afforded by the hospital. That such information is greatly needed in the community, nobody pretends to doubt; and it is eminently proper for those to give it, who, by virtue of their position, may speak with authority."

The following extracts are taken from the Doctor's exposition of the principles which have governed his management of the hospital:—

"The great end and object of an establishment like this—to secure, in the highest degree, the comfort and restoration of the patient—we have constantly endeavoured to accomplish by a diligent use of the means which the progress of science and philanthropy has placed at our disposal, among which I will only mention a cautious and sparing medication, a liberal provision for all the material comforts of life, such as food, warmth, ventilation, labour, and those other comforts no less conducive to mental health, such as amusements, recreation, and books, and last, but not least, gentle practices and kindly influences."

Dr. Ray has long been known for his leaning toward the expectant treatment of insanity. He thus alludes to the subject: "I presume that medication has not been used so extensively as it is in some other hospitals, but if my experience has led me to narrow very much the range of its application, it has, at the same time, strengthened my faith in its efficacy when properly applied. But, if insanity is a disease of the brain, according to the common belief, it may be asked why it should not be treated with medicine like other diseases, and the question would seem to imply a charge of inconsistency, if not stupidity. The reason of our practice will appear when we consider that every intelligent physician, before administering drugs, ascertains with some degree of exactness the nature and seat of the disease, and entertains a reasonable degree of assurance derived from experience, that the drug selected will have the expected effect. Now, it can hardly be contended that the present state of our knowledge on this subject presents much foundation of this kind."

2. The principal statistics of the *McLean Asylum*, for the year 1866, are as follows:—

	Men.	Women.	Total.
Patients in hospital, January 1st	93	99	192
Admitted in course of the year	48	55	103
Whole number	141	154	295
Discharged, including deaths	49	49	98
Remaining, December 31st	92	105	197
Of those discharged, there were cured	21	25	46
Died	17	12	29

"It is remarkable that twenty persons died of paralysis."

Nearly three-fourths of Dr. Tyler's report consists of a discussion of the psychological effects of imbibed alcoholic liquors, and the proper method of treating persons who have used them to excess.

3. The medical history of the *Worcester* (Mass.) *Lunatic Hospital*, for the official year ending with the close of September, 1866, furnishes the following general results:—

	Men.	Women.	Total.
Patients in hospital October 1, 1865	169	172	341
Admitted in course of the year	163	126	289
Whole number	332	298	630
Discharged, including deaths	142	107	249
Remaining, September 30, 1866	190	191	381
Of those discharged, there were cured	42	47	89
Died	27	13	40

Causes of death.—Paralysis, 8; phthisis pulmonalis, 6; exhaustive mania, 6; inanition, 4; marasmus, 4; cardionosus, 3; apoplexia, 2; epilepsia, 2; senectus, 2; typho-mania, 2; autochiria, 1.

Dr. Bemis writes as follows in relation to very aged and feeble persons, some of whom are doubtless taken to every hospital: "When at last they are brought to the hospital, the fatigue of the journey frequently destroys their little remaining strength, and they sink and die at once. If not, the new and strange surroundings, the absence of familiar faces, the loss of comforts, the well-known easy chair, the old, cozy room and bed, the accustomed food, and, above all, the kind offices of the faithful family physician, give such a shock to their sensibilities as to render them objects of the utmost pity. There is great impropriety in committing this class to our care. They cannot recover under any circumstances, and but seldom improve."

4. At the *Asylum for Insane Convicts*, at Auburn, N. Y., the number of patients on the 1st of October, 1865, was 73. Admitted in course of the year, 4; discharged, "well," 3; improved, 1; by death, 3. Remaining at the end of the official year, 70. Died of phthisis, 1; convulsions, 1; senile debility, 1.

Dr. Van Anden's report is chiefly devoted to the material interests of the establishment. He recommends its enlargement, and that it be "so organized that it shall be competent to receive and care for all the *really criminal insane* of our State."

5. The termination of the official year of the *New Jersey State Lunatic Asylum* has been changed from the 31st of December to the 30th of November, the time at which the fiscal year of the State closes. Hence the report now before us covers a period of but eleven months.

	Men.	Women.	Total.
Patients in hospital, December 31, 1865, .	174	193	367
Admitted in eleven months	85	88	173
Whole number	259	281	540
Discharged, including deaths . . .	54	77	131
Remaining, November 30, 1866 . . .	205	204	409
Of those discharged, there were cured .	23	35	58
Died	15	16	31

"Death occurred in fourteen cases from general exhaustion of the system in feeble and worn-out persons; in two, from general paralysis; in four, from consumption; in four, from apoplexy; in one, from epilepsy; in three, from exhaustion of acute mania; in two, from congestion of the lungs; and in one, from erysipelas of the head and face."

"Eleven more patients," says Dr. Buttolph, "have been treated during the period of eleven months than during the whole of any previous year; and the year closes with forty-two more patients than did the year before, or one hundred and nine beyond the proper number; thus showing that all practicable effort has been made to meet the increasing demand for room for the insane of the State.

"The general operations of the institution, both internally in regard to the health and mental condition of the patients, and externally in reference to the various employments and amusements resorted to, have been about the same as in previous years."

The extensive additions to this hospital, being sufficient for the accommodation of two hundred additional patients, are far advanced toward completion. The buildings are all inclosed, and, in some of them, the internal work nearly finished.

6. At the *Mount Hope Institution* the number of cases of mania-a-potu admitted in the course of the year 1866 was 97, of which 95 were males and 2 females. These, with one male in hospital at the beginning of the year, make a total of 98. The number discharged, cured, was, men 95; women 2; total 97. The statistics of the insane patients are reported as follows:—

	Men.	Women.	Total.
In hospital, January 1, 1866 . . .	110	117	227
Admitted in course of the year . . .	124	54	178
Whole number	234	171	405
Discharged, including deaths . . .	166	14	250
Remaining, December 31, 1866 . . .	68	87	155
Of those discharged, there were cured . .	26	35	61
Died	7	8	15

"Of the deaths, four resulted from apoplexy and paralysis; two from phthisis; two from general marasmus; two from typhomania; two from epilepsy; one from senile decay; one from chronic diarrhœa; one from suicide. Most of the deaths occurred amongst the chronic class of insane; but several expired within the first week of their admission."

In this connection Dr. Stokes says: "It should be borne in mind that some strength and vital force are requisite to enable a patient to be transferred safely to any distance. When the case is greatly prostrated, and the vital energies impaired from any cause, there is no doubt but that their removal may only hasten their death; and every year patients are admitted here who never rally subsequently to their reception."

7. We take the following numerical facts from the report of the *Western Asylum of Virginia*, for the official year ending with the 30th of June, 1866:—

	Men.	Women.	Total.
Patients at the beginning of the year . .	177	130	307
Admitted in course of the year . . .	37	30	67
Whole number	214	160	374
Discharged, including deaths . . .	33	24	57
Remaining at the end of the year . .	181	136	317
Of those discharged, there were cured . .	16	10	26
Died	10	6	16

"No endemic or epidemic malady has assailed our household; nor have we been visited by any disease which, because of assimilation, could be termed sporadic. The amount of sickness has been comparatively small, and the percentage of deaths below the annual average.

"Humanity and a wise policy," says Dr. Stribling, "unite in calling upon the Legislature to make prompt and suitable provision for the care and cure of insane coloured persons."

8. In obedience to the provisions of a recently enacted law, the Directors of the *Longview Asylum* have furnished accommodations for the coloured insane of Hamilton County. A handsome building known as the "Avenue House," and formerly occupied as a water-cure, has been purchased and fitted up for the reception of that class of patients. In their annual report for the year terminating with the end of October, 1866, they mention it as "being the first asylum for the coloured insane in the United States." In this assertion we apprehend they are mistaken. Nearly or quite ten years ago a separate department for this purpose was erected in connection with the U. S. Government Hospital for the insane, near Washington.

We subjoin the statistics for the year just mentioned.

	Men.	Women.	Total.
Number of patients October 31, 1865 . .	183	193	376
Admitted in course of the year . . .	86	85	171
Whole number	269	278	547
Discharged, including deaths . . .	79	80	159
Remaining, October 31, 1866 . . .	195[1]	193[1]	388
Of those discharged, there were cured . .	53	51	104
Died	13	20	33

Died with phthisis pulmonalis, 13; typho-mania, 4; epilepsy, maniacal exhaustion, chronic diarrhœa, acute diarrhœa, suicide, 2 each; typhoid pneumonia, injury from fall, ovarian dropsy, erysipelas, apoplexy, general paralysis, 1 each.

Dr. Langdon very justly says: "The percentage of recoveries continues to be very gratifying, especially considering the fact that no distinction in the reception of patients is made between the curable and incurable. * * * We receive all applicants, and keep them until removed by death or recovery, or until so far improved that they can be well cared for at home."

---

[1] As in the report. To agree with the preceding figures these should be 190 and 198.

It is believed that in no other class of hospitals for the insane which receive all cases, irrespective of duration or condition, is the proportion of cures so large as in those which treat the insane paupers of large cities. Such hospitals have the advantage of others in that they are very sure to receive their patients in the early stages of the disorder.

The Doctor states that habitual drunkards are not admitted at Longview, because they are not considered insane; and, in view of the extensive prevalence of intemperance, recommends that an institution for inebriates be established by the State. P. E.

Art. XVIII.—*Modern Inquiries: Classical, Professional, and Miscellaneous.* By Jacob Bigelow, M. D., late President of the American Academy of Arts and Sciences, and late Professor in Harvard University. 12mo. pp. 370. Boston: Little, Brown & Co., 1867.

The venerable and erudite author of these essays, by presenting them in a collected form, has conferred a benefit on the profession and the public. His well-trained intellect and matured judgment—his long and large experience in the practice of the profession—his refined and cultivated taste in art, and his extensive scientific attainments entitle his opinions to a respectful and careful consideration. Some of these opinions, at the time they were uttered, were at variance with those generally entertained. Of these a portion are now accepted as established truths, and there are some others which seem to us to be so well founded in truth that they must ultimately prevail.

The contents of the volume before us are mostly reprints of occasional productions—the exceptional recreations of a long, busy, and useful professional life. The subjects discussed are mainly professional, educational, or political.

The first have been already noticed in this Journal as they successively appeared, and if we were to again notice them it would be but to reiterate the commendations previously bestowed on them.

The papers on the subject of education we would strongly recommend to the consideration of our readers. Some of the views therein expressed, if not in accordance with prevailing opinions, should at least be entitled to a calm consideration. With regard to the objects and limits of education, the author's views seem to us to be eminently judicious. We would commend the following extracts from the address delivered before the Massachusetts Institute of Technology to those enthusiasts who are so utopian as to believe that common schools are a remedy for the defects of a political system—that, in opposition to the decrees of Providence, they can render all men in every respect equal, and endow with judgment and morality those born with limited intellectual capacity and with an imperfect moral sense:—

"The school system of New England is at the present moment our glory and our shame. We feel a just pride that among us education is accessible to all, because our public schools are open to the humblest persons. But, in our zeal for general instruction, we sometimes forget that a majority of men and women must labour with their hands, that the world may not stand still, and that all may not lose by disuse the power to labour. We cannot train all our boys to be statesmen, nor all our girls to be authors and lecturers, or even teachers. We ought not, therefore, to drive them into the false position of expecting to attain, by extraordinary effort, a place which neither nature nor circumstances have made possible. Many unfortunate children have been maimed for life, in body and mind, by being stimulated with various inducements to make exertions beyond their age and mental capacity. A feeble frame and a nervous temperament are the two sure consequences of a brain overworked in childhood. * * *

"Since, in the dying words of Laplace, 'the known is little, but the unknown is immense,' and—

'Since life can little more supply
Than just to look about us and to die,'

it is a question of paramount importance how, in this short period, education can be made to conduce most to the progress, the efficiency, the virtue, and the welfare of man.

"It is not presumptuous to say that education, to be useful, must, as far as possible, be made simple, limited, practicable, acceptable to the learner, adapted to his character and wants, and brought home to his particular case by *subdivision* and *selection*. * * *

"In a nation in which 'the government is made for the people, and not the people for the government'—whose fundamental requisite is 'the greatest good of the greatest number'—education, elementary and practical, such as common schools can furnish, must be made accessible to all who can be withdrawn either from labour or idleness for a sufficient time to realize its advantage. Afterwards those whom favour or fortune or strength of will has qualified to approach the higher paths of intellectual culture should be encouraged, assisted, and excited to enter and occupy either one or many of the more difficult fields of literature and science, preferring those that best harmonize with the adopted path which is to be the occupation of life. And as to the residuary class, not numerous in any country, to whom is left the option of pursuing pleasure or knowledge, it is fortunate when there is judgment enough to perceive that these two objects can be identified in one pursuit. Knowledge is never so successfully cultivated as when it becomes a pleasure; and no pleasure is more permanent than the successful pursuit of knowledge, combined, as it should be, with moral progress. Natural gifts and variations of aptitude qualify men to tread with advantage the special paths of art and science; and such gifts are most frequently born in and with them, and cannot be imparted from without. A musical ear, an artistic eye, and a poetic sense are not to be created in any man. We might as well expect to endow him with the sagacity of the hound, the quick ear of the hare, or the lightning sense of danger which preserves and insures the perilous life of the summer insect.

"The man of robust though ungainly frame may make a first-rate labourer; the slender, shy, and delicate youth may shine in the walks of literature; the man of strong voice, and prompt and comprehensive intellect, may take precedence as an orator. But transfer these conditions, and we have a result of mistakes and failures. What God hath put asunder, man cannot well join together."

The four concluding papers in the volume are political *jeu d'esprits*, which, however appropriate they may have been at the time, having now served their temporary purpose, we could wish that they had been omitted from the collection, as they tend to keep alive feelings which the interests of the country seem to require should be allowed to die out.

Art. XIX.—*A Treatise on Human Physiology; designed for the Use of Students and Practitioners of Medicine.* By John C. Dalton, M. D., Professor of Physiology and Microscopic Anatomy in the College of Physicians and Surgeons, New York; Member of the American Academy of Arts and Sciences, Boston, Mass.; of the National Academy of Sciences of the United States of America, etc. etc. Fourth edition, revised and enlarged, with 274 illustrations. 8vo. pp. 695. Philadelphia: Henry C. Lea, 1867.

No better proof of the value of this admirable work could be produced, than the fact that it has already reached a fourth edition in the short space of eight years. Possessing in an eminent degree the merits of clearness and condensation, and being fully brought up to the present level of Physiology, it is undoubtedly one of the most reliable text-books upon this science that could be placed in the hands of the medical student. The detailed criticism to which this work was subjected in a former issue of this Journal renders it unnecessary to dwell at any length upon the present edition. The arrangement of former editions has been preserved in this, and although all parts of the book appear to have received more or less complete revision, the greatest number of additions and changes have been made in the section devoted to the physiology of the nervous system. These changes have been rendered necessary in consequence of the advance in our knowledge of the structure of the spinal cord and base of the brain—an advance chiefly due to the excellent investigations of J. Lockhart Clarke, Esq., of England, on the gray substance of the spinal cord, and of Dr. John Dean, of Boston, on the medulla oblongata and trapezium.

Our author has also introduced into this edition brief notices of the results of the observations and experiments of Helmholtz, on the rapidity of the nervous force; of Donders, on the accommodation of the eye to distinct vision at different distances; of Virchow, Leuckart, and others on the structure and history of parasitic animals affecting the domestic quadrupeds and the human subject; and of Prof. J. Wyman, on the appearance of vibriones in organic infusions, and the conditions which favour or prevent their reproduction.

While earnestly recommending Dr. Dalton's Physiology to the profession, we may be permitted to suggest that its usefulness as a work of reference would be greatly increased by discussing in the next edition many topics which at present find no place within its pages. A treatise on Human Physiology, professedly written for both students and practitioners, while it presents to the student an accurate, general view of the leading well-established facts and fundamental principles of the science, should also be sufficiently comprehensive to meet the wants of that more advanced student, the general practitioner of medicine, whenever he has occasion to refer to it. J. A. M.

ART. XX.—*Essentials of the Principles and Practice of Medicine. A Handy Book for Students and Practitioners.* By HENRY HARTSHORNE, M. D., etc. etc. Large 12mo. pp. 417. Philadelphia: H. C. Lea, 1867.

THIS work of Dr. Hartshorne must not be confounded with the medical manuals so generally to be found in the hands of students, serving them at best but as blind guides, better adapted to lead them astray than to any useful and reliable knowledge. The work before us presents a careful synopsis of the essential elements of the theory of diseased action, its causes, phenomena, and results, and of the art of healing, as recognized by the most authoritative of our professional writers and teachers. A very careful and candid examination of the volume has convinced us that it will be generally recognized as one of the best manuals for the use of the student that has yet appeared. It bears the unmistakable impress of a clear logical mind, well instructed in the principles and practice of medicine, as well from an intimate acquaintance with the writings of the master spirits of our profession, as from a sufficiently extended course of professional experience. Dr. H. possesses in a high degree a facility of condensation, by which he is enabled to express much in a small compass, and at the same time with the most perfect clearness. While particularly concise throughout, it will be found that in respect to those subjects which especially demand attention, either from their difficulty, their comparative novelty, or their intrinsic importance, a comparatively extended consideration has been given, thus rendering the work to the student and young practitioner, in all respects, a very "handy book" for study and reference, and an appropriate and safe introduction to the standard systematic treatises on the principles and practice of medicine, and to the leading monographs on particular diseases, or points of practice. D. F. C.

ART. XXI.—*Ununited Fracture successfully treated, with Remarks on the Operation.* By HENRY J. BIGELOW, M. D., Professor of Surgery in the Medical College of Harvard University; with abstracts from Dr. Bigelow's Clinical Lectures on the subject, and cases. [Reported by Richard H. Derby.] 8vo. pp. 25. Boston: David Clapp & Son, 1867.

PREVIOUS to the year 1860, Dr. Bigelow's experience in the treatment of ununited fractures had been the same as that of all other surgeons, viz., that no class of cases was the source of more annoyance and trouble to both patient and doctor than this. He had tried, he tells us, rest, compression, blisters, seton, drilling, excision of bone, dovetailing, etc. etc., and had failed with all. This is likewise the experience of most surgeons. In fact all the operations hitherto proposed are more or less unsatisfactory as to their results, and several of them are by no means unattended with grave risk to the life of the patient. So certain is this, that it is still taught, we believe (as it undoubtedly was a few years ago), by a well-known Professor of Surgery in this city, that a patient with ununited fracture has, in many cases, a better prospect by not submitting to an operation, but by being content to go through life, wearing a more or less complicated apparatus, to supply externally to the limb the firmness which may be wanting in the bone.

Ollier's admirable papers on the reproduction of bone from the periosteum (published in the *Gazette Médicale*, and in Brown-Séquard's *Journal de Physiologie*) suggested an improvement upon the operations for ununited fracture which Dr. Bigelow was not slow to adopt. Jordan, of Manchester, had already endeavoured to utilize the periosteum in his operations for ununited fracture, but by detaching the muscular structures from the periosteum, and by neglecting to secure the approximation and immobility of the resected portions of bone, had failed of the good results which Dr. Bigelow afterwards obtained by attending to those important points.

The pamphlet before us gives details of eleven consecutive cases of ununited fracture, nine of the humerus, and one each of the femur and radius, in which Dr. Bigelow's operation was performed; a perfectly successful result following in all except one case (the humerus being the affected bone), in which failure was caused by disease of the osseous structure, and subsequent amputation was required.

The peculiarities of Dr. Bigelow's method consists essentially in detaching the periosteum from the tapering extremities of the affected bone, and from the healthy shaft for about half an inch on either side, taking care not to strip the bone higher than the line of proposed section. Caution is to be exercised not to separate the muscles from the periosteum; and after the sections have been made (which Dr. Bigelow does with an ordinary saw, but which would be much better done with the saw described by Mr. Butcher of Dublin), the resected ends are to be brought together and secured in close apposition by a strong wire passed through half the thickness of the shaft of either fragment. The periosteal flaps or cuffs may also be united by sutures, though this is not essential. The limb is then to be placed upon an appropriate splint, and the patient sustained by the administration of a generous diet. Phosphates may be given with advantage, "upon the principle," says Dr. Bigelow, "of giving egg shells to hens." We should have supposed that to supply to the patient's system those elements for which there was special need under the circumstances, would have been as legitimate a principle to act upon, as that of giving egg shells to hens; but this is perhaps a matter of taste, and may be passed over without further comment.

Each of the eleven cases detailed in this pamphlet is of interest, and the recapitulation of the whole series gives us a most favourable impression of the operation performed. This favourable impression is strengthened by the fact that in five of the cases the seton, drilling, and excision, with or without wiring the fragments, had been previously tried and had failed.

Dr. Bigelow's conclusions seem to us to be sound, and amply warranted by a consideration of the cases narrated, and as such we quote them in full for the benefit of our readers.

"1. This operation is a successful one.

"2. Though not a trifling operation, it is not dangerous.

"3. In the operative procedure the points deserving attention are, the *incisions* which should be arranged for the free escape of pus. The *periosteum*, which is not to be detached from the muscles, and which, after incision, is best torn out from the rugous inequalities of the bony extremity, and subsequently attached by suture or not. The excision of at least a quarter of an inch of sound cylindrical *bone*, besides the irregular and tapering end. The *wire* which should not be twisted too tightly, lest it break out of the bone.

"4. The wire may be left in place indefinitely without danger of necrosis; and usually until union has unequivocally taken place; a period of from two to six months.

"5. Burrowing pus is to be evacuated, when it approaches the surface, so that the wound will insure it free and permanent exit.

"6. The patient is to be invigorated by such food as he bears, fresh air, and other stimulus if required.

"7. The operation may be repeated if it fails, but only after several months' interval."

Dr. Bigelow's pamphlet concludes with two cases introduced to illustrate the question of the periosteal reproduction of bone. The first is a case of excision of the elbow-joint in which the condyles of the humerus were in some degree reproduced, though it afterwards was found necessary to amputate the arm, the patient dying eventually of pulmonary consumption. In the other case, one of rhinoplastic operation, the periosteum was dissected from the forehead with the frontal flap. No bone was produced in the new nose, while the denuded portions of the frontal bone became necrosed, and eventually exfoliated. The case of excision of the elbow is illustrated by three wood-cuts, which represent sufficiently well the appearances described.

We shall certainly employ Dr. Bigelow's operation ourselves if an occasion should be presented, and we hope that it will receive an extended trial at the hands of the profession; for in the hands of its originator it has undoubtedly been very successful, and it seems to us to promise more upon theoretical grounds than any other operation with which we are acquainted.

J. A., JR.

ART. XXII.—*The Preparation and Mounting of Microscopic Objects.* By THOMAS DAVIES. 12mo. pp. 144. New York: William Wood & Co.

THIS little work, published without a date, contains more useful information for the general microscopist than would be inferred from a superficial examination. Pretending to be principally made up of selections of the most approved methods from different sources, many of which are quite inaccessible to the advanced worker, as well as to the beginner, the ground is very thoroughly examined.

Chapter I. is devoted to the *apparatus* required in mounting, including the various forms of cells adapted to different objects and different modes of illumination, and to the cements and varnishes employed in making certain of these and cementing down their glass covers. It will only be necessary to recall one or two useful points less generally known. One of these is, the addition to varnishes employed in making shallow cells, of a solution of India-rubber in naphtha, with a view of diminishing an unfortunate tendency, which many have, to crack, or "chip," as the author expresses it. A few drops of such solution, or, what we have found equally useful and more accessible, of a solution of India-rubber in *benzine*, will diminish such tendency. This also gives the cells an elasticity by which they are permitted to accommodate themselves to the expansion or contraction of their contents, which is extremely important under certain circumstances. It should be added until a drop allowed to fall upon a glass slide, when dry, recovers itself when "pitted" by pressure with the finger. When added to "Brunswick black," which is composed of asphaltum, linseed oil, and turpentine, very nearly the "black Japan" varnish of Mr. Davies, it forms a most excellent cement for making cells, and fastening down their glass covers. This is the favourite of Dr. Beale and others. We are informed by an experienced manipulator of this city, Dr. J. G. Hunt, that a solution of sugar is also useful for diminishing this tendency to crack or chip, and as it is so easily obtained, recommends itself. The difficulty which exists in causing paper labels to adhere to glass slides by means of the ordinary solution of gum arabic is well known. This is entirely obviated by adding a drachm of loaf sugar, or a few drops of glycerine, according to Mr. Davies, to every ounce of an ordinary strained solution.

Chapter II. teaches how to prepare and mount objects *dry*. This includes not merely general directions, but special, for different kinds of objects. Much of the chapter is devoted to the collection and preservation of fresh diatoms and foraminifera, and much valuable information, otherwise inaccessible, is given. Nor are other objects omitted. Structures of plants, scales of insects, blood, certain crystals, raphides, scales of fishes, etc., are all included. We are very properly informed that many of these objects, to be studied, should be mounted as well in preservative solutions or in balsam. This is especially the case where it is desired to study the internal structure of objects, when they should be mounted in substance of a specific gravity approaching their own. Such substance, penetrating their anterior, renders them more transparent and reveals their structure.

Chapter III. treats of *mounting in Canada balsam*. The two important objects to be attained are, first, that the object should be quite dry, and second, to get rid of air-bubbles. The first is attained by ordinary means, and the second by soaking, or, if necessary, boiling in turpentine. Discrimination must, of course, be exercised in the use of heat, as some structures are injured by it. The principle is simple—the turpentine insinuates itself and displaces the air, and as balsam is soluble in turpentine, it, in turn, mingles with the latter. Then the object, freed by draining from superfluous liquid, is "carefully laid upon, or, if possible, thrust into the balsam," which is placed upon the slide by a "blunt-pointed glass rod." To this a slight heat is previously applied, which will cause any air bubbles to rise to the surface of the drop, whence they may be removed by a heated needle. The thin glass cover is likewise to be warmed and allowed to fall upon the balsam, driving a small wave before it, thus expelling the bubbles which remain. In these instances no special cell is required, the balsam forming at once the preservative, the cell, and the cement. When the object is of such thickness as to require a cell, this should be filled with balsam in the manner described by T. S. Ralph, in the *Microscopic Journal* (what date or number is unmentioned). "Fill the cell with clear spirit of turpentine, and place the specimen in it, and have ready some balsam, just fluid enough to pour out of the bottle when warmed by the hand; pour this on the object at one end, and gradually inclining, allow the spirit of turpentine to flow out on the opposite side of the cell till it is full of balsam; then take up the thin glass cover, and place carefully upon it a small streak of Canada balsam from one end to the other. This, if laid on the cell with one edge first, and then gradually lowered until it lies flat, will drive all the air before it, and prevent any bubbles from being included in the cell."

No mention is made of the "artists' colour tubes" for holding and dropping Canada balsam. These furnish decidedly the most convenient means, as the smallest or largest drop may be obtained without the aid of a glass rod, by which the balsam is liable to be conveyed to other situations where it is not wanted.

No reference is made to the method of mounting moist tissues in Canada balsam, a subject of no little importance, as all tissues naturally bathed by fluids must necessarily be altered by the process of drying. This is accomplished, as directed by Beale, by first soaking the moist tissue in an alcoholic solution of acetic acid or caustic soda, which does not alter the albuminous materials, the soda and acetic acid counteracting the coagulating properties of the alcohol. After the tissue is well saturated, the alcoholic solution, now containing a little water from the specimen, is changed for some fresh fluid, and after it has been allowed to soak in this for some time, it is placed in a solution of Canada balsam in ether. This is also changed once or twice for fresh portions of the ethereal solution, when the specimen may be taken out and placed upon a glass slide. A little fresh balsam may now be added, and the specimen mounted permanently. Although Canada balsam will not mingle with water, ether will, alcohol again mixes with ether and Canada balsam with ether. The alcohol removes the water, the ether replaces the alcohol, and the Canada balsam, soluble in ether, may thus be introduced into the interstices of the tissue.

Chapter IV., on *preservative fluids*, etc., *particularly where cells are used*, treats briefly of these, and the cells mostly used in this branch of microscopic mounting. Of the former, modified formulæ are required for different structures, but the principal are those of which glycerine is the basis; as glycerine and camphor water, glycerine jelly, consisting of glycerine, gelatine, and white of egg, glycerine and gum, consisting of pure gum arabic, glycerine and water, each an ounce, and arsenious acid 1½ gr. The naphtha and creasote solution, so highly recommended by Beale, is not referred to, and of carbolic acid, it is said, it has not been known long enough to warrant any opinion of its merits. But of this we are told in the last edition of *The Microscope in Medicine*, "the preservative qualities of this substance are now well known. A solution for mounting and preserving tissues may be made by adding 100 parts of distilled water to 1 part carbolic acid. Both animal and vegetable tissues may be preserved in this medium." Dr. Beale further adds: "Upon the whole, I am still of opinion that the strongest glycerine and glycerine jelly are the most advantageous media for preserving animal tissues, and carbolic acid and creasote fluid for the preservation of various specimens, for which a fluid possessing the highly refracting properties of glycerine is not suitable." All specimens should be previously soaked for some time in one or two changes of the preservative in which they are to be mounted.

We have ourselves used glycerine and camphor water generally in the proportion of 1 to 2, almost exclusively for animal tissues, and found it eminently satisfactory. So far as tested, Dr. J. G. Hunt finds a solution of acetate of alumina most suitable for vegetable tissues.

A statement of Dr. Carpenter is quoted by Dr. Davies which is worth recollecting. It is with reference to the solvent power of glycerine for carbonate of lime. The writer lost a useful specimen from ignorance of this fact.

Chapter V. is on *sections, and how to cut them*, with some remarks on dissection. In connection with the former are the usual details necessary for this difficult and tedious process, for which we must refer to the book. Some further details should be given in regard to the processes of hardening and preparing animal tissues for section. We believe it rarely advisable to make sections of dried animal tissues, as such specimens must be somewhat altered by the process of drying. Though the *section-cutter* for *vegetable* structures, and *Valentine's knife* for *animal* tissues are very convenient; yet, for the former, a sharp razor is admirable, and we have made by far the most satisfactory sections of animal tissues, at least for immediate examination, by the small scissors curved "on the flat." The remarks on dissection are principally confined to the lower animal organisms.

Chapter VI., on *injection*, includes an account of the apparatus required, with the manipulations necessary for making opaque and transparent injections. These are fully treated, and, indeed, it appears to us, unnecessarily so as regards opaque injections. So confident are we of the superiority of the transparent injections, that we believe they will before long entirely supersede the opaque. Their advantages are more particularly referred to in a notice of Beale's Microscope in Clinical Medicine, in the July (1867) number of this Journal.

Chapter VII., *miscellaneous*, is occupied with such subjects of interest to the microscopist as cannot conveniently be classified. Among these are the circulation of the blood, the rotatory motion of the fluid in many plants, micro-photography, etc. The first is best studied in the web of a frog's foot, wing of a bat. and tail of a fish, or tadpole not too old; the second in the nitellæ, the vallisneria spiralis, the anacharis alsinastrum, and in the chara vulgaris. In the first, third, and fourth no preparation is required except plucking a part from a stem and laying it upon a slide, but the vallisneria requires to be cut in sections. The remarks on photomicrography refer only to the production of minute pictures which serve as objects for the microscope. We can only conceive these to be interesting as toys, but must admit that they alone come, strictly speaking, within the province of the "preparation and mounting" of objects. But as the photography of magnified objects has become of so much importance, and the only published directions for making them appear in English works, we should certainly have excused the author for overstepping the limits of his title, and introducing some account of them, with the method of obtaining them. It might not inappropriately be stated, in this connection, that we are aware of no published account, except what has appeared in English journals (*Intellectual Observer*, July and August, 1866, and *Quarterly Journal of Microscopic Science*, April, 1867) of the very successful efforts which have been made in this direction of microscopic inquiry, under the auspices of the Medical Department of the Army of the U. S. We confess to feeling somewhat jealous of the attention shown our transatlantic brethren by our countrymen engaged in these researches, while Americans are compelled to receive the information at second hand.

In concluding this notice of Mr. Davies' hand-book, we feel glad to say what has already been intimated, that it will prove a valuable guide to the manipulator. Yet we cannot but say of it, also, that there is an absence of systematic arrangement in its subjects treated, which does not, it is true, impair the utility of so small a book as it would a large one, but is equally objectionable in both. The value of books of this class is also greatly enhanced by illustrations, of which this little volume has none. Perhaps the description of the "universal stand," pp. 25 and 26, would be more intelligible by the aid of a diagram. As it stands, we confess our inability to form any conception of a universal stand from reading the description there given. J. T.

ART. XXIII. — *Micro-chemistry of Poisons, including their Physiological, Pathological, and Legal Relations; adapted to the Use of the Medical Jurist, Physician, and General Chemist.* By THEO. G. WORMLEY, M. D., Prof. of Chemistry and Toxicology in Starling Medical College, and of Natural Sciences in Capital University, Ohio. With seventy-eight illustrations upon steel. 8vo. pp. 668. New York: Baillière Brothers, 1867.

IN the preparation of the above work, no ordinary amount of research and experimental investigation must have been demanded, for it was necessary to gather information from every source, and to make careful inquiry in order to ascertain the character of that which is accepted or confirmed, and presented to the reader as worthy of trust and confidence. The mere compiling into an accessible form the scattered observations that are constantly accumulating on all hands merits high praise, and would alone be a boon of much value; but when, in addition to this, there is adduced in confirmation numerous careful, accurate, and well devised experiments in which the results are brought down to a specific standard not to be found elsewhere, the benefit conferred becomes fully appreciable by those who are called upon to aid justice in practical investigation. The microscope has, it is true, been latterly applied to aid in detecting the minute forms of various poisonous substances, but more especially as by Guy and Nelwig, in the results of sublimation, in both organic and inorganic substances. To this the author has added those produced by reagents in definite amount of solution, giving a precision to the results highly valuable to those who know the variations which are produced by alterations in the relations of the reacting substances. The author has accomplished his object in a manner highly creditable to his skill, both as a chemist, and microscopist, and with evidences of patience and perseverance, showing intense mental devotion, and full appreciation of the value of the results to be gained. The illustrations which accompany the text are of a remarkable character, "drawn from nature and transferred to steel by her" (the author's wife) "to whom the work is inscribed," with neatness, precision, and finish, which leaves nothing further to be desired.

It would be in vain to attempt a satisfactory analysis of this work, which is not confined to the chemistry of poisons on a small scale, but enters fully into all the relations of the subject necessary both for the expert and physician; treating of all those which by accident or design may produce fatal results. To such an extent has this been effected, that it would appear scarcely justifiable in any judicial investigation to neglect its teachings, so much having been added to the means by which these substances may be recovered from organic mixtures, and their characters distinctly defined. R. B.

ART. XXIV.—*Chemistry of the Farm and Sea, with other Familiar Chemical Essays.* By JAS. R. NICHOLS, M.D. pp. 123. Boston: A. Williams & Co., 1867.

A WELL-WRITTEN and instructive little volume, intended to inform those not versed in chemical science upon several points of general interest, in which an accurate knowledge is of great advantage, both to the farmer and general housekeeper. Divided into nine chapters each distinct in itself, it treats of the farm and such of its management as depends for success on chemico-physiological principles; of some of its products in relation to their chemical nature, transformations, and general uses, of the dwelling, in a hygienic regard as to comfort and ventilation, and points out some obscure sources of disease, which, when detected, are readily removed or avoided, such as water impregnated with the results of vegetable decomposition, or contaminated with lead from its action on the service pipes by which it is conveyed. By this slight summary of the principal subjects noticed, it will be seen that they come home to the more important interests of many, and especially of those whose train of thought lies so much outside of their course as not to be turned thereto, except by some exterior force. Some parts of this work have been presented to the public in the form of addresses, and from their genial and attractive style, with much benefit to the hearers, a benefit which should be more extensively diffused by a free dissemination of the publication among that class of readers to whom it should be most acceptable and useful. R. B.

ART. XXV.—*Eulogium upon the Life, Professional Labours, and Public Services of* JOSEPH MATHER SMITH, M. D., Late Professor of the Theory and Practice of Physic, and of Materia Medica and Clinical Medicine, in the College of Physicians and Surgeons, New York; Physician to the N. Y. Hospital; President of the Council of Hygiene of the Citizen's Association in the City of New York; President of the N. Y. Academy of Medicine, etc. etc. Delivered before the New York Academy of Medicine, Wednesday Evening, Feb. 6, 1867. By WILLIAM C. ROBERTS, M. D. Printed for Private Distribution.

THIS very neat and well deserved eulogium commemorates the private and professional worth of one who, after a life of nearly 78 years, of which some 55 were passed in the successful practice of the healing art, and in other pursuits calculated to increase the comfort, health, and happiness of his fellow men, and to confer honor and dignity on his native State and country and to contribute, as far as was within his power, to their security, and the perpetuity of their free and liberal institutions: causing his memory to be cherished by his surviving friends and associates, his medical contemporaries and his acquaintances, as that of a learned and skilful cultivator of medical science, an able and successful teacher and writer, an upright and honourable man, and a patriotic and public-spirited citizen.

To the eulogium of Dr. Roberts is appended an address on "The Public Aspects of the Life and Labours of Dr. J. M. SMITH, delivered before the New York State Medical Society, by Dr. Elisha Harris." With this gentleman we fully concur when he describes the life of the deceased as being one full of usefulness; of his personal and professional character as one that deeply impressed and permanently benefited his medical brethren, and blessed the community in which he was long and justly regarded as one of the rarest and most perfect exemplars of the great virtues which should adorn a physician's life. He loved and honoured his profession. He died in peace, and his memory is honoured by all who knew him in life. D. F. C.

ART. XXVI.—*Surgical Clinic of La Charité: Lessons upon the Diagnosis and Treatment of Surgical Diseases, delivered in the month of August*, 1865. By Professor VELPEAU; collected and edited by A. REGNARD; reviewed by the Professor; translated by W. C. B. FIFIELD, M. D. 12mo. pp. 103. Boston: James Campbell, 1866.

WHATEVER bears the name of Velpeau is entitled to a careful and respectful consideration, and we propose, therefore, to present to our readers in some little detail the views of the illustrious professor, as enunciated in the "Lessons" before us.

We regret, however, that we cannot commend the share of the translator in the production of this volume, for it seems to us that he has scarcely done much credit either to himself or to his author. His notes appear to us to add nothing whatever to the value of the text, while the preface is entirely superfluous, and in parts quite incomprehensible. A glaring mistake upon the title page and sundry inaccuracies throughout the volume might almost tempt us to doubt the extent of the translator's knowledge of the language in which the original is written. The error to which we refer on the title page consists in designating M. Velpeau as "Membre de *l'Institute*" [sic]; whereas the well-known body of which the eminent surgeon is a member, is grammatically, as well as actually, a *masculine* assemblage, and it is as incorrect to print its title with the final "*e*," as it would be to suppose that in its *personnel* it was a conclave of old women.

So much for the work of the translator; we turn with pleasure to an examination of the merits of the book itself, and to a consideration of the valuable instructions which we may derive from the matured reflections of the illustrious surgeon of "La Charité."

Velpeau's service, we learn, comprises 75 beds, and the average number of patients under treatment in each year is about one thousand. During the year the cases of which form the subject of the present volume, the number was 1155, from which are to be deducted, however, 259, who spent but a few hours in the hospital and were not subjects of treatment. Of the remaining 896, almost 76 *per cent.* (681) were cured, while the mortality was but $6\frac{1}{4}$ *per cent.* or 56. The proportion of deaths is incorrectly stated in the text to be one in eleven, whereas, from the figures given, it should be as we have seen one in sixteen.

Ninety-five cases of fracture were treated during the year with a mortality of five, two of the latter being cases of fractured skull. Three cases of fractured spine gave two recoveries and one death, in the fatal case the lesion being in the cervical region. We entirely concur in Prof. Velpeau's opinion that the gravity of fractures of the spinal column has been exaggerated.

The principal lesson to be learned from this chapter of the book under consideration, is that almost all fractures can be successfully treated with very simple appliances, and in some cases require no treatment at all Prof. Velpeau uses no bandage in most cases of fractured jaw, believing that the pain of the injury will check any deleterious movements on the part of the patient, and that any artificial restraint would be merely annoying and unnecessary.

Uncomplicated fractures of the ribs, he finds, get well pretty much by themselves; a bandage round the body to relieve pain is all that is needful.

Fractured thighs are treated by laying the limb slightly flexed over a pillow, and maintaining moderate extension and counter-extension from the head and foot of the bed. Slight shortening, which cannot be avoided, does no harm whatever. "Lameness is, note it well, much oftener the consequence of stiffness of the joints, than shortening of the limb." Fractures below the knee may be treated by means of a simple immovable bandage. In fractured patella, fibrous union is all that is required, and here "it is, above all, necessary to avoid the stiffness occasioned by too tight applications."

Fractures of the clavicle are quickly consolidated, and it is impossible to cure them without deformity. The treatment consists in the application of an immovable apparatus, the hand being fixed upon the opposite shoulder. It is sufficient to apply this bandage about the fifth day, and to keep it on for a little over a fortnight. Fractures of the upper part of the humerus are to be treated by securing the arm against the chest, pads of wadding being interposed to prevent excoriation. Fracture of the olecranon, like fracture of the patella, is a lesion of but little importance; bony union is quite unnecessary, and a figure of 8 bandage kept on for a month or six weeks is the only treatment required.

Fractures of the lower end of the radius are best treated by flexing the hand at a right angle with the forearm; this position being maintained by means of a pasteboard splint and dextrine bandage.

Six dislocations of the shoulder were reduced by traction in a horizontal direction. Two of the elbow were reduced; one being a dislocation forwards and outwards, without fracture. Forty-five cases of inflammation of joints were treated by blisters and immovable bandages. Seven cases of hydrarthrosis were treated by injection with dilute tincture of iodine. This M. Velpeau has found to be an excellent method of treatment, and one which is entirely free from risk. The same treatment is recommended in cases of serous cysts.

Inflammations and abscesses of the areolar tissue are represented by 181 cases. An important distinction is here pointed out between the course of diffused and that of circumscribed inflammation; in the former, suppuration takes place on the fourth day, in the latter not until the eighth.

Carbuncles should be treated, according to our author, by radiating incisions like the spokes of a cart-wheel. What, by the way, has become of the treatment by pressure, so highly recommended a few years since? We used it ourselves at that time in one case of double carbuncle with perfect success, and have always thought that the method had not been fairly tried by the profession, at least in this country.

Several pages are devoted to the diagnosis of lymphatic inflammation from erysipelas, and from ordinary diffused inflammation. Erysipelas prevailed largely in "La Charité" during 1865: it was the cause of death in no less than 15 cases. "I am convinced," says Velpeau, "that none of the known methods of treatment, either local or general, can triumph over it. . . . . Erysipelas never lasts but *four days* upon the same place; only as the regions are successively invaded, the total duration may amount to six weeks; . . . . when I say four days, I mean, for a given patch, and sometimes you see only one, an infallible source of error for the inventors of new remedies."

Twenty-five cases of *burn* were treated during the year; the best application for superficial burns is the liniment of oil and lime-water (Carron oil).

Displacements of the uterus are best remedied by the use of hypogastric belts; the intra-uterine pessaries of Simpson and Valleix are capable of producing serious injury.

Thirty-five cases of swelled testicle were treated by puncture with a lancet; the pain was immediately relieved, and the duration of the disease shortened by about five days. Hydroceles are injected with iodine; and cases of phymosis treated by simply dividing the prepuce beneath the glans.

Thirteen cases of fistula in ano were submitted to operation, and M. Velpeau's experience is that simple incision is rarely sufficient. A tolerably complicated procedure is usually necessary, and hence the frequent failure of the ligature and the *écraseur.*

Cases of iritis and corneitis are treated by M. Velpeau with mercury, cautiously administered. The diagnostic marks between these cases and those of conjunctivitis are very clearly indicated.

A chapter on the statistics of operations performed during the year concludes the volume. The whole number was 120, thus divided :—

			Cured.	Died.
Operations upon the breast	19	of which	12	6
Cancroids	13	" "	10	3
Different tumours	14	" "	10	3
Amputations	8	" "	8	0
Operations upon anus	16	" "	15	0
Operations on genital organs	37	" "	35	2
Cataracts	5	" "	2	0
Different operations	8	" "	7	1
Total	120		99	15

The principal causes of death were erysipelas and purulent infection.

It is to be regretted that the text of the work before us contains so many errors in figures as well as misprints, that its utility as a book of reference is thereby seriously impaired. We have not the French edition at hand, and cannot, therefore, say whether or not this remark would apply to the original also. Had the translator devoted his energies to presenting *simply* and *accurately* the views of Prof. Velpeau, without note or comment, his book would have been none the less interesting, and would have been more valuable than in its present form.

Still we are glad that the profession in this country has the opportunity of listening to the great master's lessons, even through the medium of a faulty translation. The general appearance of the volume is sufficiently neat and attractive, though the text is disfigured by numerous and ridiculous misprints.

J. A., Jr.

ART. XXVII.—*On Malformations of the Human Heart, etc., with Original Cases and Illustrations.* By THOS. B. PEACOCK, M. D., Fellow of the Royal College of Physicians; Physician to St. Thomas's Hospital; and Senior Physician to the Hospital for Diseases of the Chest, Victoria Park, etc. Second edition. pp. 204. London: John Churchill & Sons, 1866.

THE present edition of this valuable work has been carefully revised, several cases and illustrations added, and the references considerably increased, while the author has availed himself of various treatises and memoirs recently published, or which had not previously come under his notice. Among these are the works of Friedburg, Tiedemann, and Förster, and the papers of Mayer, Kussmaul, Carl Heine, Walshe, Fuller, and Markham. The arrangement of this edition is essentially the same as that of the first. including congenital misplacements, deficiency of the pericardium, malformations, irregularities of the primary vessels, with mode of formation, symptoms, duration of life, cause of death, diagnosis and medical treatment. And as the first edition has been reviewed at length in Vol. XXXVI, (July, 1858) of this Journal, the present notice will include but an enumerative reference to the contents, with brief remarks on some points to which allusion may not have been already made.

I. In *misplacements*, the author has adhered to the arrangement of M. Breshet, but in the employment of terms has followed Dr. Alvarenga, a Portuguese writer. This arrangement includes, *first*, cases in which the organ does not occupy its proper position within the thorax, *ectocardia intra-thoracica:* and *second*, in which the heart is situated wholly or in part external to the thoracic cavity, *ectocardia extra-thoracica.*

II. *Deficiency of the pericardium* is rare, and in all of the cases quoted by Peacock the patients died of other causes, and none evinced any peculiarity of circulation before death. The subject is, therefore, briefly treated. From the cases he has seen, the author takes a suggestion as to the mode of development of the pericardium, which he believes to be an extension of the fibrous sheath of the vessels to the diaphragm, and over the heart. "When the membrane is fully developed, and the layers passing in front and behind the heart come in contact on the left side and become adherent, the sacs of the pleura and pericardium will be distinct; but if the growth be arrested, so that the two layers do not become united, the heart will lie in the pleural cavity, and the pericardium will only be represented by the crescentic fold, consisting of fibrous tissue covered on each side by pleura, which has been noticed as existing at the right side of the heart in nearly all the recorded cases." pp. 12–13. The author believes this explanation to be confirmed as correct, by the fact that when the heart has been seriously misplaced, being situated externally at front of the chest, the organ is very generally deprived of pericardium.

III. The chapter on *malformations* includes three-fourths of the entire volume. In this the author has adopted an arrangement partly founded on the period at which the development of the organ becomes arrested or perverted, and partly on the degree of impediment to the circulation which such deviation occasions, with the result of such impediment upon the functions of the heart after birth.

Arrest in development may occur at any period during the development of the heart, but the author makes three divisions.—1st. Malformations consisting in an arrest of development at an early period; 2d. At a more advanced period; and 3d. During later periods of fœtal life. This seems not the most philosophical classification, yet the difficulty of arriving at a knowledge of the precise date at which different stages of development are accomplished, renders a more precise classification difficult. Indeed, so great is this difficulty, that a total omission of a division of fœtal life into periods would appear to us justified, while the secondary divisions of these three periods might appropriately become primary. Thus we would have, according to our author, 1st. Hearts with two cavities. 2d. Hearts with three cavities. 3d. Hearts with four cavities, of which one or both septa may be imperfect, and the pulmonary artery and aorta more or less completely developed, with constriction or obliteration of orifices, or misplacement of primary vessels; each of which would be individually considered, as at present. Again, under the second basis of classification of malformations, we would have, 1st. Defects preventing the heart undergoing the changes which would ensue after birth in *a*, premature closure of the fœtal passages, and *b*, permanent patency of the fœtal passages. 2d. Defects which do not interfere with the functions of the heart at the time of birth, but may lay the foundation of disease in after life, being, *a*. irregularities of the valves, *b*. disproportion in the capacity of the cavities, and defects in the size and form of the heart. But upon a subject so obscure as the present, with regard to which so recent a writer as Hope has written that malformations are "so irregular in their combinations as scarcely to admit of being classified on general principles," and in which Corvisart and Laennec contented themselves with simply alluding to the different forms of defect with which they were acquainted, we have no right to be hypercritical. And as stated by our author, "in applying any system of classification to individual cases, difficulties will, however, often occur. For to decide the position which any given case of anomaly should occupy, it is necessary to ascertain what has been the primary defect. This is often very difficult, when the specimen itself can be examined, and becomes almost impossible in published cases, which are often imperfectly, and sometimes incorrectly described."

Yet so much are the facilities of study increased by a philosophical classification, that we could not forbear an allusion to it.

IV. *Irregularities of the primary vessels* are also divided into those consisting in defective evolutions of the aorta and pulmonary artery from the primitive vessel and branchial arches, and those in which the development of these two great vessels is less deranged, but in which there are defects which may give rise to serious results in after life. This chapter includes also deviations from the natural arrangements of the venous trunks, and irregularities of the coronary arteries and veins.

V. The *mode of formation*, or what would seem more accurate, the direct *cause* of malformations or arrest of development, is often sought for in vain; and the difficulty of accounting for the condition is greater the earlier it takes place, as where the heart consists of only two cavities. In instances, again, where the growth of the organ has proceeded to a more advanced stage, "we are frequently able," says Dr. Peacock, "to trace the circumstances which have prevented its further development." And this, he considers, will be more apparent, if we reverse the course adopted in describing the various malformations, and trace the condition of the heart from the more perfect to the rudimentary forms. Thus, if during fœtal life, after the septum of the ventricles has been completely formed, the pulmonic orifice should become the seat of disease, rendering it incapable of transmitting the increased current of blood required to circulate through the lungs after birth, the foramen ovale may, as was shown by Morgagni, be prevented from closing; and if, as was shown by Hunter, the obstructions take place at an earlier period, when the inter-ventricular septum was incomplete, a communication might be kept up between the two ventricles. In this way, also, may be accounted for, a patulous condition of the ductus arteriosus, by which in fœtal life the blood not required for mere nutrition of the lungs is carried into the aorta. If the pulmonary artery is obstructed, the pulmonary blood is forced, with an imperfect septum cordis, into the aorta, whence it passes through the ductus arteriosus into the lungs, and thus this vessel remains patulous. Obstructions in the course of the pulmonary artery, or anywhere in the right heart, as in the ventricle or valves, would act similarly, while obstructions in the left heart and orifice or upper part of the aorta would back the blood from the left auricle or ventricle into the right cavities, and thence through the ductus arteriosus into the aorta, producing equally the persistent patency of the foramen and duct or opening in the ventricular septum. By such and similar reasoning, the author arrives at the cause of many forms of malformation, though, as stated, others remain unaccounted for. The suggestive nature of such reasoning we deem extremely important, contributing not a little to the value of the volume. There is nothing presumed which is not found to be present, and from these premises a legitimate train of reasoning results so simply that it may be followed by the merest tyro in anatomy.

The *symptoms* by which malformations are characterized are those referable to derangement of the circulatory and respiratory systems, with the secondary disorders incident thereto. These would naturally be violent action of the heart, laboured respiration, and lividity of colour, though one or all of these may be absent at birth, and not make their appearance for months or even years. Having presented themselves, they recur in paroxysms of longer or shorter duration, depending upon the amount of organic defect, with which also varies the gravity of the symptoms present. In two cases the symptoms only supervened, or became more marked after falls at five and fourteen years of age. The intervals between the paroxysms may also be free from symptoms, or there may be more or less of cardiac derangement, and pulmonary obstruction with consequent lividity.

In the present increased interest in the subject of temperature in disease, it may also be worth while to state that observations by Dr. Farre go to show, that notwithstanding the sense of chilliness, or susceptibility to cold, the body ordinarily preserved the average temperature. Dr. Peacock has also repeatedly noted the temperature under the tongue and in the axilla of cyanotic children, without finding the temperature differ materially from that of a healthy child somewhat younger.

An almost constant symptom of these malformations is cyanosis, to the discussion of the causes of which Dr. Peacock has devoted several pages; but as the review of the first edition, already referred to, contains a very full summary of the argument there made, it will only be necessary to state that the author still adheres to his previously expressed doctrine that the obstruction to the flow of blood through the lungs either from or into the right ventricle, giving rise to *general venous congestion* is the essential cause of cyanosis, as originally advanced by Morgagni, and supported by Louis, Laennec, Corvisart, Ferrus, Cruveilhier, and Valleix, in France, Hasse and Rokitansky in Germany, Joy in England, and Dr. Moreton Stillé in this country, in opposition to the view of Hunter, that it is due to an admixture of the venous and arterial blood—a view advocated by Gintrac, and with some modifications by Bouillaud and Forget, in France, Meckel in Germany, by Lombard, and by Farre, Paget, Williams, Hope, Crampton, and Walshe of England.

Dr. Peacock, however, contends that the intensity of the lividity, and its peculiar colour, are modified by other circumstances of which the chief are 1st. As suggested by Chevers, that there should be an obstruction to the circulation before birth or full development, when the capillaries are naturally more capacious than in the adult; or at least it should have been of long duration that the capillaries may have become much expanded. 2d. The condition of the integuments, the deeper hue being present when the skin is thin and transparent, and the body generally emaciated. 3d. The colour of the blood itself.

The *duration of life* in persons labouring under malformations of the heart is of course extremely variable with the degree of malformation, a slight degree being consistent with long life, while in extensive malformation combined with obstruction, the duration of life is necessarily limited; and this limitation increases in a very constant ratio as the malformation increases, until life is impossible. Thus, where there was *moderate contraction of the pulmonary artery* with the heart otherwise well formed, the ages of death were from "early life" to sixty-three; when the *foramen ovale was open*, the oldest patient died at fifty-seven; where with *contraction of the pulmonary orifice, the septum cordis was imperfect*, so that the aorta has more or less communication with the right ventricle, of 64 cases, only 14 survived the age of fifteen, and the oldest was thirty-nine years at death; where the *pulmonary artery was entirely impervious*, of 28 cases, the eldest died at twelve years; where the heart *consisted of one ventricle with one or two auricles*, very remarkably, 4 cases are related to have lived eleven, sixteen, twenty-three, and twenty-four years, though the period of life is usually more limited than in the previous degrees of malformation. *Transposition* of the main arteries appears a form incompatible with long life. Of 21 cases, 4 proved fatal within the first week, and the eldest lived two years and nine months. Where the *aorta, distal to the left subclavian artery is wholly or chiefly supplied through the pulmonary artery*, duration of life is very limited—the cases of Greig and Hicks being still-born, and the eldest recorded, that of Dr. Rees, lived but ten weeks. Simple *malposition* is not necessarily productive of early death. A case is recorded by Mr. Bose, in which the patient lived to be eighty-four, and a soldier who had served many years in the army, was found to have his heart occupying the position of the left kidney. As already stated, *absence of the pericardium* does not appear to affect the functions of the heart, and *malformations of the valves* vary in their effects according to the nature of the irregularity. When the number of segments is defective they are apt to become the seat of subsequent disease, and life is more or less curtailed. Yet persons have died in advanced life with two valves undiseased at the aortic orifice. And when the number of the valves is in excess, no inconvenience appears to result.

The *causes of death* may be briefly named as, 1st. Cerebral disturbance, resulting from defective aeration of the blood and congestion of the brain. 2d. Imperfect expansion, collapse and engorgement of the lungs. 3d. Effusion into connective tissue and serous sacs. 4th. Exhaustion from imperfect performance of respiratory functions, and the circulation of blood in great part venous. 5th. Other diseases predisposed to, by defective conformation of the heart, as apoplexy, or paralysis from engorgement, or softening of the brain, extravasation of the blood, epistaxis, etc. 6th. Other diseases accidentally occurring, as peri-, endo-, and myo-carditis, tubercular affections, etc. Of these, the first two are by far the most frequent.

Since the publication of the first edition, the observation of other cases has confirmed the author's view that the generalization of Rokitansky, as to the incompatibility of tuberculous affections with cyanosis or a venous congestion of the blood was too hastily advanced. Undoubted cases of this coincidence are recorded.

The *diagnosis* of malformation is stated to present scarcely any difficulty, though the determination of the precise form is admitted to be no easy task. Reasoning from probabilities, however, and the comparative frequency of different forms of malformation, an approximate diagnosis may be made.

The *treatment* of these cases is of course such as general principles would suggest—careful protection from cold, rest, with such remedies as will secure this, and the best possible condition of all the functions of the economy may prolong life greatly where the slighter forms exist, while in the more serious forms resulting speedily in death, remedies can at best but alleviate the sufferings of the patient, while death is often a grateful termination to the scene of suffering.

We have passed rapidly, and somewhat irregularly over the contents of this useful volume, endeavouring to make our notice, as far as possible, complemental to the more extended review of the first edition, to which allusion has been made. And where the same points have been dwelt upon at any length, it has been because we felt their importance demanded it.

This book is a truly creditable one to the author, and we are persuaded that no one can fail to gain from its perusal a clearer knowledge of the physiology and pathology of the central organ of the circulation. The language is clear, and the cases of a class very difficult to render intelligibly, are well related, while the very excellent lithographs aid us greatly in their comprehension. We object, however, to the method employed to indicate the size of the cardiac orifices, natural or pathological, which is by measurements in *circumference*. We believe that to the majority of readers it becomes necessary, before a correct idea of size can be obtained, to go through with the mental operation of dividing the measurement by three, to get the approximate diameter, which appears to us the correct method of indication. We entirely approve of the author's practice of giving measurements in French metres *as well as* in English inches, because it is only by constantly associating the two that we can learn to estimate the dimensions when the French system alone is used, as by continental writers.

J. T.

Art. XXVIII.—*Atlas of Surgical and Topographical Anatomy.* By B. J. Béraud, Surgeon and Professor to the Maternity Hospital of Paris, etc. etc. Illustrated by one hundred and nine plates, drawn from nature, by M. Bion; translated by Robert Thomas Hulme, M. R. C. S., England. 4to., 11 parts. London: H. Baillière, 1867.

It was originally proposed to issue this magnificent Atlas in ten parts, but the addition by the French publishers of nine plates while the work was passing through the press, rendered it necessary to extend the English edition likewise, by furnishing an eleventh fasciculus, containing the supplementary matter. The first seven numbers of this book have already been noticed in this Journal (No. for October, 1866, page 519, and April, 1867, page 520), but we cannot permit the completion of the volume to pass without again inviting the attention of our readers to its claims as the handsomest work on surgical anatomy yet published. We say "the handsomest" advisedly; for while admitting all that can be said as to its general accuracy and beauty of execution, we greatly doubt if it can be considered as practically useful as the less elegant work of Maclise.

The great merit of the plates in the latter volume is that they explain themselves, so to speak, at a glance; whereas those in the work before us by their very brightness of colouring, their minuteness, and their multiplication of references are often obscure, and occasionally almost incomprehensible. One plate in particular, No. XCV., illustrating the region of the knee, can, we think, be understood only, by most readers, after prolonged and careful study of the accompanying letter-press explanation.

The plates, though sometimes not sufficiently clear, are, we think, generally accurate; we must make, however, an exception in the case of Plate LXXI., which professes to represent the uterus in its normal position in the pelvis; but which seems to us more adapted to illustrate an aggravated case of anteflexion.

One great merit in the volume before us is in presenting numerous illustrations of *transverse sections* of different parts of the body; these are particularly valuable as enabling the reader better to appreciate the relative depth below the surface of the various bloodvessels, nerves, etc., than could be done in any other way.

The "applications to pathology and operative surgery," which accompany each plate, are not so satisfactory as we could desire; it is a matter of great difficulty not to introduce either too much or too little didactic surgery in a work on surgical anatomy, and our author seems to us to have occasionally erred on either side. We have not the French edition before us, and, therefore, cannot say positively whether the objectionable passages are precisely the same in the original as in the translation. Certainly the following sentences give a very unsatisfactory and a not very correct view of two very important operations: "Disarticulation of the knee is not often employed, because some [*sic*] surgeons prefer amputation of the thigh. In performing this operation it is not possible to obtain a flap except from the front of the knee, and then it only consists of skin, a circumstance which exposes it to gangrene. Resection of the knee is often performed in England, but seldom in France. It is easily performed by reaching the articulation from its anterior surface, but the results of the operation are far from encouraging."

Surely this does not give all the information which we are entitled to expect from a work on surgical anatomy, which devotes twice as much space, on the same page, to an exposition of the author's method of treating fractured patella.

Again, in the "application" of Plate LX., which gives a view of the superficial structures of the male perineum, we are told that it is necessary after the operation of lithotomy to place "a drainage tent in the wound, keeping at the same time the thighs partially open." Now, without dwelling on the manifest incorrectness of this doctrine, we must say that it seems to us superfluous in a work which does not profess to teach practical surgery.

With regard to the mechanical execution of the work before us, the plates (which we observe bear the French imprint, and are, doubtless, identical with those of the Paris edition) are, as we have before observed, almost perfect in design and colouring. The letter-press is printed in rather small type, and in very long lines, which renders it inconvenient to read; and we regret to find that it contains a large number of misprints.

We have pointed out deficiencies rather than excellences (which are by no means wanting) in the work of M. Béraud, because we think that a production of so much splendour and real merit should be submitted to a more rigid examination than would be required for one of inferior value. Moreover, there is a tendency at the present time (which is seen not only in the publishing community) to substitute elegance and gorgeous colouring for simple accuracy and absolute correctness; and, although this may answer well enough for Christmas annuals and "*éditions de luxe*," it should be carefully watched and guarded when it leaves the flowery fields of polite literature, and enters the less showy but more useful domain of science and practical instruction. J. A., JR.

ART. XXIX.—*A Practical Treatise on Apoplexy (Cerebral Hemorrhage); its Pathology, Diagnosis, Therapeutics, and Prophylaxis: with an Essay on* (so-called) *Nervous Apoplexy, on Congestion of the Brain, and Serous Effusion.* By WILLIAM BOYD MUSHET, M. B., etc. 8vo. pp. 196. London, 1866.

THIS is a highly instructive little treatise on a most important disease, which, from a very common ignorance of its true pathology, is constantly liable to be confounded with other comatose affections, having but little in common with a true apoplectic seizure, save insensibility and loss of consciousness. Dr. Mushet, to use his own words, has "attempted to extricate apoplexy as a substantive disease from an assemblage of symptoms, *i. e.*, from the multiform phases of coma." He is strongly impressed that the main obstacle to a proper and simple understanding of the affection has been its confusion with every malady attended by unconsciousness, irrespective of pathological conditions; *coma* (the order) and *apoplexy* (the genus) having been almost invariably regarded as metonyms, loosely expressing a deeper or more pronounced degree of cerebral torpitude than their obsolete and less definite congeners—carus, cataphora, and lethargus.

According to Dr. Mushet, true apoplexy is in every case a cerebral hemorrhage. He defines the disease as a more or less sudden impairment of the functions of the brain and nervous system—of consciousness, motion, and sensation—from extravasation of blood into the substance, or upon or between the membranes of the brain, arising from internal causes. This definition, of course, excludes simple congestion, serous effusion, traumatic apoplexy, and the so-called nervous apoplexy of certain authors. These, Dr. M. contends, are not idiopathic states, and therefore not, strictly speaking, apoplectic.

There is, according to Dr. M., in cases of apoplexy a close relation between a morbid condition of the heart, of the cerebral vessels, and of the kidneys.

The foregoing views are based upon a series of cases detailed by the author, and an examination and collation of the pathological investigations, the clinical observations, and the admissions of the leading medical writers on apoplexy. Dr. M. has in this manner made out, we think, a very fair argument in evidence of the truth of the views entertained by him of the pathology of apoplexy—views, we may remark, which certainly lead to a more rational treatment and prophylaxis of the disease than are ordinarily pursued.

The second part of the present essay is devoted to a brief consideration of the so-called nervous apoplexy, of congestion of the brain, and of serous effusion. It is a reprint of articles which appeared originally in the *British and Foreign Medico-Chirurgical Review*, vols. xxxvii.-viii.

Each of the latter subjects is carefully examined, and the nature of the several affections to which they respectively refer pointed out. Though short, still the account given of the several comatose conditions so generally described as varieties or degrees of apoplexy, is particularly instructive. We view the concise treatise of Dr. M. as a valuable addition to the library of every working physician. In a small compass it contains much that is useful and of a direct practical application. D. F. C.

ART. XXX.—*Da Congestão e Hemorrhagia Cerebral Lição clinica feita na Escola de Medicina de Lisboa*, en Novembro de 1865, Pelo Dr. ABEL JORDÃO, Lente na mesma escola. 8vo. pp. 16. Lisboa, 1866.

Cerebral Congestion and Hemorrhage, a Clinical Lecture, delivered in the Medical School of Lisbon, Nov. 1865. By Dr. ABEL JORDÃO, a Professor in the School. Lisbon, 1866.

TWO cases of cerebral congestion, both in progress of recovery, were presented. In the one designated No. 9 there had been incomplete paralysis of the right arm and leg, which had disappeared, but in case No. 12, the left arm and leg were paralyzed, and the motions of the forearm and hand were still incomplete. In both the improvement, as is usual in cases of hemiplegia, began in the leg. In both patients there was noted greater sonorousness of the anterior part of the chest on percussion, and difficulty in hearing the cardiac sounds, accompanied by a mucous murmur in the posterior part of both lungs.

The lecturer suggested that these phenomena were affiliated with the function of the pneumogastric nerve. When this latter is cut the lung is unable to expel completely air or the liquids secreted, and hence their accumulation and the dilatation of the air-cells. These phenomena, which are observed after *experimentally* cutting the nerve, are noticed also, in greater or less degree, in proportion as the *death stertor* is developed. In the first case there is true and *complete* paralysis of the branches of the pneumogastric distributed to the lungs, resulting from the cut or division which separates them from the centre of nervous action. In the second case the pulmonary branches are not separated or isolated from the centre, but there is abatement of their active force.

In these two instances there is paralysis of the branches of the pneumogastric, by interruption of the force in one case and by its diminution in the other. There is a phenomenal but gradative relation between them; and this also exists between the pulmonary symptoms of cerebral congestion, with or without hemorrhage and those of the stertor of death.

In these there is diminution of nervous force through exhaustion or embarrassment of its manifestation. In those there is also diminution through embarrassment, or, so to speak, *suffocation* of nervous force, produced either by compression resulting from dilatation of the vessels or by commotion in the cerebral substance which originates this dilatation.

In proportion as the paralyzation of the pneumogastric nerves is greater or less so are the pulmonary symptoms, observed in these two patients, more or less decided. As they were both recumbent from the moment the congestion took place the mucous murmur is decided in the posterior, and increased sonorousness on percussion is notable in the anterior part of the chest. It is merely a mechanical phenomenon.

Patient No. 12 from time to time made visible efforts to swallow always followed by an hydro-aerial sound which appears to start from the pharynx. The motility of the œsophagus diminishes with the paralysis of the nervus vagus. The saliva is not swallowed in proportion as it is poured into the mouth, but after it accumulates in its posterior part in some quantity the pharyngeal muscles throw it into the semi-paralyzed œsophagus and then the hydro-aerial sound is produced. The respirations are slower, but deeper. In both patients respiration is exactly like that of an individual just awakened, and has a somewhat abdominal character.

Venesection was not resorted to in either case. The lecturer remarked that the advocates of bleeding in cerebral congestion argue that its object is to disgorge the dilated vessels; but as the cerebral vessels are not inert tubes, venesection will not produce *drainage* of the brain. It may diminish the quantity of blood in the circulatory system, but the cerebral vessels in virtue of their own vitality, as the theory of partial circulations proves, remain dilated. No one, the author remarks, bleeds to remove an ecchymosis from any part of the body. Apoplectic hemorrhage is in fact but a cerebral ecchymosis, which necessarily impedes the function of the brain just as a superficial ecchymosis impedes that of the skin. After bleeding the pulse is developed because arterial tension is diminished and consequently the motions of the heart become freer. After bleeding there is perturbation of the circulation. The advocates of the use of this therapeutic agent are not consistent when they advise persons, obnoxious to cerebral congestions, to avoid all causes which accelerate the circulation, while in the treatment of the complaint they resort to means conducive to the same end.

The lecturer argues that bloodletting is not always as injurious as might be expected, because it has two actions: one depletive, which is the worst, and the other derivative, which in a degree lessens the consequences of the first. He rejects venesection, not on account of its derivative but its depletive action, and therefore the agent itself, because one effect cannot be obtained without the other, and prefers the application of derivatives.

He considers the use of leeches in congestion and hemorrhage not so pernicious as venesection. Applied in small number, and so that the bites may be closed as soon as the leeches fall off, we obtain strong derivation at the cost of an almost insensible depletion.

But Dr. Jordão declares that in the treatment of cerebral congestions he prefers itinerant or fleeting sinapisms, because their derivative action is more rapid and more evanescent. A sinapism begins to act in a few minutes after its application; but a vesicatory is much slower, and leaves the skin in a condition which forbids a renewed application on the same spot till after the lapse of considerable time, and it acts with greater force than the sinapism, producing febrile manifestations, which are to be dreaded in cerebral congestion because they are always accompanied by loss of equilibrium in the circulation.

The two patients improved rapidly under the use of fleeting sinapisms and a few drops of an alcoholic solution of sulphate of atropia. According to modern experiments the physiological action of atropia as well as of belladonna on the brain consists in causing contraction of its vessels. If they are dilated in the condition of congestion, a more rational means cannot be employed. The lecturer prefers atropia to the alcoholic extract of belladonna because of its known uniform strength. But its administration under certain circumstances may be improper. If a vessel has been ruptured and not well consolidated, the blood impelled by the contraction of the vessels may destroy the cicatrix. For this reason in cases of hemorrhage it is advisable to delay its administration some days after the accident or until the symptoms indicate the condition of passive congestion which almost always follows the hemorrhage.

Possibly it might be said that the patients would have improved without any application. No doubt; for the administration of many and powerful remedies has killed perhaps multitudes of patients, while an expectant course has saved many.

The conclusions urged by Dr. Jordão are—1. That the treatment of congestion and hemorrhage by belladonna and its alkaloid is physiological and rational. 2. That there is no danger in its use if some days are allowed to elapse after the hemorrhage. 3. And that this medicine is worthy of further trial and study.

At the close of the lecture Dr. J. called attention to the frequency of apoplexy in Lisbon. The system of alimentation, essentially feculent, the mode of life, and the climate concur, perhaps, in Lisbon, to make fatty degeneration of the tissues in general, and the cerebral arteries especially, more frequent. This is an hypothesis which possibly merits consideration, in the opinion of the lecturer. W. S. W. R.

Art. XXXI.—*Notes on Epidemics. For the Use of the Public.* By Francis Edmund Anstie, M. D., F. R. C. P., etc. First American edition, 12mo. pp. 95. Philadelphia: J. B. Lippincott & Co., 1866.

That the causes of nearly all endemic diseases may be completely eradicated, has been proved by the most unequivocal testimony. Even in respect to many if not all the epidemic maladies, it has been shown by facts innumerable, that their occurrence in the midst of a city or district may be guarded against, or if they do occur, their spread may be circumscribed, and their character of malignancy so far modified as to greatly reduce the mortality produced by them. It is all important, in view of these facts, that every citizen, more especially the officers and members of the several municipal and local legislatures, should be instructed in the means by which the important results above referred to may be accomplished.

To aid in the diffusion of such instruction is the object of the little work of

Dr. Anstie, which is simply an extension of an article which appeared in the January number for 1866, of the *British Quarterly Review.*

To use very nearly the words of Dr. A., we may remark, that whatever increased attention may have been aroused of late years to the subject of endemic and epidemic diseases, it is very certain that, with the public at large, this interest is but a vague sentiment.

Whoever will converse with unprofessional gentlemen, even with such whose daily avocations bring them into frequent contact with the localities and classes, where and among whom diseases either of an epidemic or of a strictly endemic character are most liable to occur or are chiefly developed and fostered, will be struck with the fact, that as yet, the important bearing of sanitary laws upon the practical questions connected with the prevention and mitigation of disease is, as yet, so illy understood that it can scarcely be said to be known at all. No mistake can be more serious in its consequences than is that of regarding the growth of infectious diseases as a matter of mere local or personal interest. That which is happening in one infected district may be occurring in many other places where the conditions of daily life are similarly unwholesome. Now, unfortunately, the almost inevitable result of these incidental, and, at first, strictly local nurseries of infection, is, if they be neglected, to daily multiply centres from which disease and death are spread in every direction throughout the entire community, while at the same time the evil is augmented wherever it had previously existed.

The work of Dr. A., concise as it is, is a very judicious one, and well adapted to convey to unprofessional persons valuable instruction on matters in which they are all equally concerned, "the means, namely, for the prevention or amelioration of disease." D. F. C.

ART. XXXII.—*On Addison's Disease: Clinical Lectures on Addison's Disease, and a Report on Diseases of the Supra-Renal Capsules.* By EDWARD HEADLAM GREENHOW, M. D., F. R. C. P., etc. etc. 8vo. pp. 228. London, Nov. 1866.

IN undertaking the investigation, the result of which forms the latter portion of this little volume, consisting, mainly, in analyses of 196 cases recorded by different physicians, with the name of the reporter, age and sex of patient, previous history and duration of illness, the symptoms, the colour of skin, and the post-mortem appearances in each case, the leading object the author had in view was to show what is actually known respecting the so-called Addison's disease, in order, if possible, to dispel the doubts which many members of the profession still entertain as to the reality of its existence. No one, we think, as Dr. G. remarks, who impartially considers the evidence set forth in the report referred to, can any longer hesitate to recognize a definite relation between a certain train of morbid phenomena, and a particular form of disease in the supra-renal capsules. If, as Dr. G. correctly remarks, this truth be once fully recognized, it will then be no longer necessary to go on accumulating evidence in support of the reality of Dr. Addison's discovery; but future inquiries, starting from the basis of what is already known, should now be directed towards the elucidation of the true nature and causes of the disease in question. Towards this further object Dr. Greenhow has contributed suggestions arising out of his own clinical observations, and confirmed, as it would seem to him, in some measure, by the evidence he has collected from the writings of others.

To such as would form a clear idea of the present state of our knowledge in respect to the character and nature of the affection known as Addison's disease, we recommend a careful perusal of the little treatise before us. D. F. C.

Art. XXXIII.—*On the Principles of Æsthetic Medicine, or the Natural Use of Sensation and Desire in the Maintenance of Health and the Treatment of Disease, as Demonstrated by Induction from the Common Facts of Life.* By Joseph P. Catlow, M. R. C. S. 8vo. pp. 325. London, 1867.

Not content with this first title, Dr. Catlow has given us a second in these words: "The Organic Principles of Æsthetic Orexic, and Logical Therapeutics and Biology; or the Natural Use of the External Senses, the Physical Appetites, the Intellectual Faculties, and the Social, Moral, and Religious Affections, in the Appropriation of Congenial Impressions and the Regulation of Art for the Development and Maintenance of Life and Mind, the Promotion of Health, and the Treatment of Disease." Ἡ *φύσις ἐςόχασταί εκαστον οὐδέν τι ἔλασσον τῃς ἀπολήξεως ἢ τῃς ἀρχῆς τε κὰι δίεξαγωγῆς.* (Marc. Antonin., *lib.* 8, § 16.)

Whoever shall take the trouble to wade through this volume, which we suspect was intended to be only the first part of a more extended essay, which death prevented the author from completing, will meet, certainly, with many valuable truths, and some excellent suggestions, capable of development into useful and valuable practical results, communicated in a style which would seem to be chosen expressly "to darken counsel."

The idea of making use of and carefully managing the natural sensations and desires or appetites for the maintenance and promotion of health and the cure of disease, is far from being a novel one; and we cannot discover, amid the metaphysical disquisitions of Dr. C., as contained in the work before us, anything absolutely new—whether it respects rationale or practice.

The following, which the author gives as a synopsis of his argument in the present volume, will afford our readers a very fair specimen of his style. We quote the synopsis entire.

"The extrinsic postulates of the living system with the passive and active relations of living beings to each other and to their common Creator, in all its modes of health and disease, are naturally indicated by the susceptibility of the external senses to perceptibly pleasant or organically congenial impressions from their severally appropriate objects, as such impressions are mutually modified; and by the appetites or apparent motions that are suggested or executed, and modified by their perception, remembrance, or incidence, independently, socially, or casually induced." D. F. C.

Art. XXXIV.—*Diarrhœa and Cholera; their Nature, Origin, and Treatment through the Agency of the Nervous System.* By John Chapman, M. D., M. R. C. P., M. R. C. S. Second edition, enlarged. 8vo. pp. 248. London, 1866.

There is much in the volume of Dr. Chapman to interest and to instruct the medical reader. At the same time there is in its teachings in respect to the etiology and pathology of cholera, a great deal which strikes us as purely hypothetical and very far from being sustained by any series of well-authenticated observations, or by the direct results of carefully conducted post-mortem examinations. A close study of cholera during its different visitations in our midst, under circumstances well adapted to lead to correct conclusions in respect to the seat and nature of the disease, prevents us from giving our assent to the views in relation to its pathology advanced in the volume before us. According to Dr. C. all the phenomena of cholera are due to simultaneous hyperæmia of the spinal cord and of the ganglionic nervous system; a position, the correctness of which he has, with great ingenuity attempted to establish. It is not our intention, on the present occasion, to enter into an examination of the true pathology of cholera. The question, has, to a certain extent, been already discussed in recent numbers of this Journal, while noticing the late publications on cholera. For an outline of what we esteem the true theory of the production of the choleraic attack, we refer our readers to the book notices just indicated.

In respect to the treatment, by the application of ice inclosed in a properly constructed "bag," to the spine, as advocated by Dr. C., we can say nothing from actual experience; but, from the benefit we have seen to result, in some severe cases of cholera, from friction made with portions of ice over the epigastrium of the patient, we shall certainly test the efficacy of the spinal ice bag when the opportunity presents, without, however, trusting to its effects alone.

D. F. C.

ART. XXXV.—*Chemistry.* By WILLIAM THOMAS BRANDE, D. C. L., F. R. S., ALFRED SWAINE TAYLOR, M. D., F. R. S. Second American edition, thoroughly revised. 8vo. pp. 764. Philadelphia: Henry C. Lea, 1867.

THIS second American edition of an excellent treatise on chemical science is not a mere republication from the English press, but is a revision and enlargement of the original, under the supervision of the surviving author, Dr. Taylor. The favourable opinion expressed on the publication of the former edition of this work is fully sustained by the present revision, in which Dr. T. has increased the size of the volume by an addition of sixty-eight pages. These are made up by numerous small additions in parts where the subjects appeared to require more elucidation, and by the introduction of new matter on points which had been the subjects of investigation since the first edition had been issued. Among the former may be mentioned—chemical force; solubility of salts (with a table); evaporation; spectrum analysis; osmosis of, with penetration of metals by, gases; ozone; antozone; detection of organic impurities; properties of magnesium, iron, uranium, platinum, &c. in inorganic, and chloroform, petroleum and its constituents, nitroglycerine, soaps, valerianates, aniline colours, &c. in organic chemistry. Among the older and well-known metals, an account of some salts not previously deemed worthy of notice has been introduced, and the new metals discovered by the application of spectrum-analysis, indium and thallium, are described, and such of their compounds as are of sufficient importance noticed. In the appendix there is given a comparison of the metric and of the ordinary system of weights and measures usually adopted, together with the author's views of the different systems of chemical nomenclature and notation which are at present used or proposed, and the reasons for preferring the old system which has been so universally accepted until within a few years past. The style and execution of this edition correspond with that formerly issued from the same press.

R. B.

ART. XXXVI.—*Elements of Human Anatomy; General, Descriptive, and Practical.* By T. G. RICHARDSON, M.D., Prof. Anat. in Med. Dep. Univ. Louisiana. Second edition. Carefully revised and illustrated by nearly 300 Engravings. 8vo. pp. 671. Philadelphia: J. B. Lippincott & Co., 1867.

THE first edition of this treatise appeared in 1854. Its text has been reproduced with but little alteration. Various transpositions of matter, it is true, have been made, but there are few additions, and these unimportant. The greatest innovation is seen in the discarding of many of the rather rude cuts of the first for much better executed ones in the present edition. These have been selected in great part from those engraved for Prof. Leidy's treatise, with a few from Holden. It is a pity, we think, that all the original engravings have not been omitted. Their imperfections might have been overlooked were the entire work on a par with them; but when confronted continually with really elegant illustrations, their defects become more glaring.

H. A.

QUARTERLY SUMMARY

OF THE

IMPROVEMENTS AND DISCOVERIES

IN THE

MEDICAL SCIENCES

ANATOMY AND PHYSIOLOGY.

1. *Chemistry of the Nerves and Nervous Centres.*—Some important investigations on this subject have been prosecuted by O. LIEBREICH, in which he shows that neither cerebrin, nor cerebric acid, nor cerithin, nor any of the so-called phosphuretted fats, pre-exist in the brain; but that all these are probably modifications of one substance, which he calls protagon.—*Sydenham's Soc. Bien. Retros.* 1867, from KUHNE's *Lehrbuch der Phys. Chem.* 1866, p. 341.

Prof. HERMANN claims to have found protagon also in the blood. It is contained principally, if not exclusively, in the globules, especially the red globules. —*Med. Press and Circular,* April 10, 1867.

2. *Source of Muscular Energy.*—Profs. FICK and WISLICENUS (*Lond., Edin. and Dub. Phil. Mag.*, June, 1866) give an account of an experiment which seems conclusively to show the error of Liebig's theory that muscular power is derived from the oxidation of muscle, and the truth of that advanced by Bischoff and Voit, that the oxidation of hydrocarbonaceous material is the source of that power. They ascended the Faulhorn, a peak of the Swiss Alps; during the ascent, for eighteen hours previous and six hours after it, they took hydrocarbonaceous food only: and it was found that the great muscular exertion had but very slightly increased the amount of urea excreted, and that during the six hours after the ascent even less urea was excreted than before starting. Had the source of muscular power been the oxidation of albuminous material, the urea excreted during, and shortly after the ascent, ought to have undergone a very decided increase. They compare a muscle to a steam-engine; the iron framework is represented by albuminous material, which is worn to some extent by the muscle's action, just as the iron is by the working of the engine; in the muscle, as in the engine, hydrocarbonaceous material is burned to produce force.

With the above conclusions Professor Frankland agrees (*Lond., Edin. and Dub. Philos. Mag.*, September, 1866). After giving several very valuable tables of results of experiments as to the actual energy generated by the oxidation of given weights of muscle, albumen, fat, &c., he sums up a long and interesting article with the following conclusions: "1. A muscle is a machine for the conversion of potential energy into mechanical force. 2. The mechanical force of the muscles is derived chiefly, if not entirely, from the oxidation of matters contained in the blood, and not from the oxidation of the muscles themselves. 3. In man, the chief materials used for the production of muscular power are non-nitrogenous; but nitrogenous matters can also be employed for the same purpose, and hence the greatly increased evolution of nitrogen under the influence of a flesh diet, even with no increase of muscular exertion. 4. Like every other part of the body, the muscles are constantly being renewed; but this renewal is scarcely perceptibly more rapid during great muscular activity than during comparative quiescence. 5. After the supply of sufficient albuminoid matters in the food of man to provide for the necessary renewal of the tissues, the best materials for the production both of internal and external work are non nitrogenous matters, such as oil, fat, sugar, starch, gum, &c. 6. The non-nitrogenous matters of food which find their way into the blood, yield up all their potential energy as actual energy; the nitrogenous matters on the other hand, leave the body with a portion (at least one-seventh) of their potential energy unexpended. 7. The transformation of potential energy into muscular power is necessarily accompanied by the production of heat within the body, even when the muscular power is exerted externally. This is doubtless the chief, and probably the only source of animal heat."

Matteucci, in a letter to Professor Frankland (*Ibid.*, October, 1866), while admitting the accuracy of the above conclusions, says that from his experiments upon frogs' muscles he "cannot avoid conceding that the muscular fibre itself is also oxidized and burnt during contraction."

Nawrocki, of Breslau (*Centralblatt*, June 2, 1866), has from experiments upon frogs' muscles come to a similar conclusion; he finds that the albuminous constituents of muscle are wasted during its contraction, a conclusion which had indeed been previously arrived at by Ranke of Munich in his excellent researches upon tetanus.

Fick, Wislicenus and Frankland do not however deny that the albuminous constituents of muscles are wasted to some extent during its contraction, but the legitimate conclusion deducible from their researches, seems undoubtedly to be, that in normal conditions during contraction the oxidation of albuminous matter, bears a very small proportion to that of hydro-carbonaceous material. —*Journ. of Anat. and Phys.*, Nov. 1866. [Consult on this subject the more recent experiments of Prof. Parkes in preceding No. of this Journal, p. 242.]

---

3. *Physiological Relations of Colloid Substances.*—Mr. A. Ransome, of Manchester (*Brit. Med. Journ.*, Feb. 3, 1866), gives a *résumé* of the admirable discoveries of Graham, regarding the class of colloid substances. He makes some important suggestions regarding the assistance which they afford to explain the phenomena of digestion. He raises objections to the theory that pepsine and ptyaline act as ordinary ferments during digestion, and advances the following in its stead. "The changes produced during digestion are chiefly brought about by purely molecular influences analogous to the so-called catalyses wrought by many inorganic substances." He thinks that ptyaline and pepsine are colloid substances which play the part of catalytes, by whose action fibrin, coagulated albumen, &c., are liquefied, rendered easily diffusible, and in consequence easily absorbed.—*Journ. Anat. and Phys.*, Nov. 1866.

---

4. *Recent Remarks concerning the Sugar of Muscle.*—Dr. R. McDonnell, in a very interesting paper (*Journ. Anat. and Phys.*, May, 1867) presents a short history of this subject.

In Aug. 1861, G. Meisner announced his discovery of a true sugar in muscle, one of the most beautiful of the recent discoveries of physiological chemistry. It affords a basis for the most comprehensive theories as to the mode of decomposition of albuminous matter; and such inferences Meissner did not fail to draw. He sought by two methods, which appear conclusive, to establish with certainty the view that the sugar in muscle is in truth derived from this organ itself (and not from the blood); and secondly, that it is a product of the decomposition of albumen.

He found sugar to exist in the muscular tissue of an animal which had for a long time been fed exclusively on flesh, and, what was still more conclusive, he detected it in muscle from which all blood had been removed by the injection of water. The sugar therefore appears to be derived from the muscular structure itself, and it is certainly highly probable that it owes its origin to the albumen.

When Dr. Johannes Ranke undertook to investigate the chemical changes which occur in muscular tissue, in consequence of muscular action, it was natural that so well characterized a substance as Meissner's muscle-sugar should attract his attention. He therefore determined not only to repeat the experiments of Meissner, but to investigate whether the quantity of sugar in muscle undergoes any change in consequence of muscular action; in other words, whether after tetanization of muscle the sugar contained in it was found to be increased or diminished in quantity.

Ranke, by his experiments, which we have not space to detail, has furnished a direct proof that this sugar found to exist in muscular tissue, and increased by muscular action, actually arises where it is found, and is not conveyed from the liver or elsewhere; in fact, that the sugar is formed from the muscular substance itself. Meissner's supposition is therefore fully confirmed; and Ranke has the merit of having established on a secure basis the following propositions:—

1st. That there exists a true fermentable sugar in muscle.

2d. That the amount of this sugar is increased by muscular action. (Tetanization caused by strychnine or electricity.)

3d. That the liver has no effect in causing this increase; for the sugar is proved to arise in the muscle itself, and from the muscular substance.

5. *Nature of Rigor Mortis.*—Dr. R. NORRIS states (*Jour. Anat. and Phys.*, Nov. 1866) that from his experiments he is led to conclude "that rigor mortis is not an affection of the vital property of irritability in muscles, and therefore cannot be regarded as vital contraction; on the contrary, that it is some peculiar alteration in muscular tissue which leads to immobility of its constituent elements, and which, so long as it is present, suspends or interferes with the properties of elasticity and extensibility in muscles; but that the phenomenon of rigor mortis is owing to the temporary suspension of the *latter quality alone*, for it is easy to understand that if antagonizing muscles are rendered incapable of elongation the limb must become fixed.

The circumstances which lead to this non-extensibility or rigidity in muscle cannot, I think, receive a better exposition than that of Brücke and Kühne, viz., that it results from the coagulation of a material contained in the interfibrillar juices of the muscles. If this be correct, the restoration of the elasticity and extensibility of the muscles, and consequently of mobility of the limbs, at the commencement of putrefactive changes, may receive an easy explanation by the hypothesis that these changes first commence in this recently coagulated fluid and restore it to a liquid condition, and thus liberate the muscular elements from their state of bondage.

6. *Action of Anæsthetics on the Blood.*—HERMANN, of Berlin (*Reichert and Du Bois Reymond's Archives*, 1, 1866), has been investigating the effect of anæsthetics upon the blood. He finds that chloroform, ether, alcohol, chloro-carbon, amyl, chlorethyl and its chlorine substitutes, ethyl, methyl, and amyl alcohols, nitrous oxide and olefiant gas, all possess a property hitherto ascribed to ether and chloroform only; they dissolve the blood-corpuscles, leaving behind a colourless viscous granule representing the corpuscle. This is ascribed by Hermann to the action of the anæsthetic upon protagon, which according to him forms a considerable portion of the corpuscles (vide paragraph Blood). Protagon was discovered by Liebreich (*Annales de Chemie et Pharmacie*, No. 134) to exist in nervous tissue in considerable abundance, and Hermann supposes that anæsthesia may be produced by the action of the anæsthetic upon the protagon in the brain. Although the blood-corpuscles are dissolved by an excess of the anæsthetic, such is not the case when it is inhaled, the quantity necessary to produce anæsthesia being too small to dissolve the corpuscles. Of course no definite conclusion as to the mode in which the anæsthetic acts can as yet be arrived at from this interesting research.—*Journ. Anat. and Phys.*, Nov. 1866.

MATERIA MEDICA AND GENERAL THERAPEUTICS.

7. *Report of the Scientific Committee appointed to Investigate the Physiological and Therapeutical Effects of the Hypodermic Method of Injection.*—Without objecting to the word hypodermic, the Committee resolved to employ the term subcutaneous in their report. The conclusions have been drawn from experiments on animals and on man in health and disease; from personal evidence of experienced medical men given before the Committee; from records of facts and other communications in answer to a series of questions drawn up by the Committee. The subject intrusted to the Committee was the physiological and therapeutical effects of this method. I. *Physiological Division:* The first experiments were made to determine the quantity of water that can be injected under the skin. It was found that the quantity varies directly as the yielding and elastic quality of the skin at the locality injected. Watery solutions of drugs were used for injection, and it was found that neutral solutions, as a rule, were tolerated, but that very acid and very alkaline solutions were apt to cause irritation. Experiments were made for the purpose of comparing absorption by skin and vein, and it was found that a drug injected subcutaneously was far less rapidly absorbed and less intense in its effects than when it was introduced into a vein. In the numerous experiments made by the Committee no symptoms have arisen which would lead them to conclude that the drug subcutaneously injected had been thrown into a vein. The pain of injection was found to depend to some extent on the density of the skin; the less the resistance presented to the needle, the less the pain experienced on the puncture. The Committee directed their attention to the effects of this method of administering various drugs, as compared with those methods in general use—viz., the mouth and the rectum—and the special points examined were, the relative rapidity of absorption, the intensity and duration of the effects following each method of administration. The following alkaloids were used: Aconitia, atropia, morphia, strychnia, and quinia. Experiments were also made with Calabar bean, conia, hydrocyanic acid, iodide of potassium, podophyllin, colocynth, aloes, and Battley's solution of opium. In the experiments with aconitia on animals the local action of the drug was exhibited in different ways, though the general type of symptoms was the same by the three methods—by the mouth the drug affected the salivary glands, by the rectum it irritated the gut, by the skin it gave rise to local pain. The smallest dose found to produce death in rabbits was—by the mouth, $\frac{1}{60}$th gr.; by the rectum, $\frac{1}{50}$th gr.; by the skin, $\frac{1}{300}$th gr. With atropia it was found that there was a stage of excitement which followed the subcutaneous injection of the drug, and was a remarkable feature of this method. Tables of the effects of this drug on man were given, and it was found that $\frac{1}{160}$th of a grain subcutaneously was sufficient to accelerate the pulse considerably. The comparative effects of morphia by the three methods were then described; the train of symptoms was found to be closely similar. A table of the effects on rabbits and on man was given in a concise form, showing that the effects of the drug injected under the skin were more rapidly manifested and more intense than by the other methods. Some interesting results were obtained from the experiments made with quinia on man. When the drug was injected into the cellular tissue, considerable elevation of the temperature was observed, this symptom being slight or inappreciable when the drug was taken (in the same quantity) by the mouth or by the rectum. Series of experiments were made in a similar manner with Calabar bean, conia, strychnia, and hydrocyanic acid, and the results obtained were tabulated in a convenient form. Experiments were also made with iodide of potassium on a healthy man who had congenital extroversion of the bladder; the drug produced some local irritation, which prevented the completion of the series. A solution of podophyllin injected under the skin was found to give rise to free diuresis—a symptom which was characteristic of this method of administering the drug. Experiments were also made with solutions of colocynth and aloes, but considerable irritation followed their use. II. *Therapeutical Division:* The Committee were limited in the

number of drugs that could be used, from the locally irritating properties which some valuable medicines possess. Although many experiments were performed to test the value of local injections, the Committee failed to obtain any evidence to show that the local predominates over the general effects. Investigations were then made of the therapeutical value of this method of administering various drugs. Aconitia was found to give rise to so much local tingling that the drug was considered unfit for subcutaneous injection. In case of simple neuralgia, atropia was considered to have a very beneficial effect when thus given, and in some cases more permanent relief was found to follow its injection than that of morphia. The Committee believed that the value of morphia was materially enhanced by this method, as the action of the drug is not only secured with greater intensity and rapidity than by the ordinary modes, but the duration of its effects is prolonged. The same advantages characterize this mode of giving quinia in intermittent fevers, but some caution is requisite in giving large doses of this drug, as irritation may arise from its presence under the skin. The conclusions which the Committee deduce from their investigations were—1. That, as a general rule, only clear neutral solutions of drugs should be injected, for such solutions rarely produce local irritation. 2. That, whether drugs be injected under the skin, or administered by the mouth or rectum, their chief physiological and therapeutical effects are the same in kind, though varying in degree. 3. But that symptoms are observed to follow the subcutaneous injection of some drugs which are absent when they are administered by the other methods, and, on the other hand, certain unpleasant symptoms which are apt to follow the introduction of the drugs by the mouth and rectum are not usually experienced when such drugs are injected under the skin. 4. That, as a general rule, to which, however, there may be exceptions, clear neutral solutions of drugs introduced subcutaneously are more rapidly absorbed and more intense in their effects than when introduced by the rectum or the mouth. 5. That no difference has been observed in the effects of a drug subcutaneously injected, whether it be introduced near to, or at a distance from, the part affected. 6. That the advantages to be derived from this method of introducing drugs are—(*a*) rapidity of action; (*b*) intensity of effects; (*c*) economy of material; (*d*) certainty of action; (*e*) facility of introduction in certain cases; (*f*) with some drugs the avoidance of unpleasant symptoms. This plan, therefore, is most likely to be adopted where very rapid and decided effects are required from drugs which are operative in small doses.—*Med. Times and Gazette*, August 10, 1867.

—

8. *Physical and Physiological Action of Medicines.*—Dr. Wm. Murray, in an interesting and very suggestive paper (*Journ. Anat. and Phys.*, May, 1867), observes: "A truly expressed science of medicine will never be produced until we start from these data, and characterize diseases by terms expressive of the exact kind and degree of their departure from the standards of health, nor will the true actions of medicines, or other aids to health, be appreciated till we know how and to what extent they restore these conditions of health. What is wanted is to trace the steps by which medicines proceed to the cure of disease, and see whether that can be discovered which will enable us to say *à priori* what result will follow the administration of a medicine; not because we have learned this from experience, but because we know what kind of action it will produce, and because we know *à priori* that this action will exactly remedy the lesion which exists. From the days of Hippocrates till now we have gone on accumulating mere empirical facts, and in this way we have sometimes managed to cure disease; but to this very day we have failed to ascertain the steps by which our cures were achieved: and medicine will hardly maintain a place among the advancing sciences unless physiology dawns upon her darkness and enables us to see more than the mere beginning and end of what we are doing.

In all sciences there are certain facts which are said to be ultimate; facts incapable of further explanation, and not the result of any combination of simpler forces than that which they themselves express: such a fact is the attraction of bodies to the centre of the earth resulting from or the expression of the force of gravitation. Around all the great forces there cohere a large number of these ultimate facts, and when we have traced anything which occurs in the animal economy to its source in those ultimate actions which rest upon a force whose laws we understand and can test by exact experiment, we have traced it to its origin. In the body, however, we constantly meet with processes which are not in accordance with any known law of physics, chemistry, or physiology; so that we cannot expect to go far in the endeavour to explain the effect of medicine on those processes which are as yet beyond the pale of science. Nevertheless it is our duty to try for an explanation in physical, chemical, and physiological laws, which are known to prevail, and failing here, to wait until these sciences have thrown more light upon the mysterious region of the so-called vital forces.

Seeing that the mysteries of life are every day becoming more evidently resolved into the operation of very simple forces, the prospect of rescuing the action of remedies from obscurity is most encouraging; and it bids us look for very simple explanations instead of shrinking from the effort with awful convictions that no explanation can be given.

Let us try our method on one of our ordinary remedies, and let us take one whose actions have been well observed but never explained. *Calomel*, which I use as a term for any mercurial preparation, effects various changes in the body, and has been called a purgative, a cholagogue, an alterative, general resolvent, deobstruent, &c. &c.

One and all of its actions can however be referred to a series of processes which lead to a rapid passage of fluids through the various membranes of the body. It acts on the absorbing and secreting surfaces, *effects the passage of fluids from the tissues into the blood through the walls of bloodvessels and absorbents*, and it promotes, we aver, the passage of certain nutritive portions of the blood *through the walls of bloodvessels into the tissues*. Bringing the action of this remedy face to face with forces known to prevail in the body, we are struck with the likeness which it bears to the action of the *osmotic forces;* these, by encouraging a mutual interchange of fluids through animal membranes, being pre-eminent in bringing about absorption, secretion, and nutrition. May not calomel act therefore by affording such conditions to the osmosing membranes and fluids as will greatly facilitate their activity? and may not its action be related to the still more complicated series of physical laws which regulate the dialysing properties of these same animal membranes and fluids? conferring upon them not only the power to pass fluids to and fro, but also the power to select what shall and what shall not be disposed of in this way.

From these considerations calomel ought to cause the absorption of material which is deposited in the tissues—and so it does! it ought also to eliminate certain matters from the blood, which it does; and it ought to be a promoter of nutrition, because the passage of matter from the blood to the tissues is another important process dependent on the osmotic and dialytic forces. Is calomel a promoter of nutrition? we affirm it is, whenever the extent to which it induces the passage of nutrient matter into the blood and from the blood into the tissues is not exceeded by the drain of secretions from the blood.

That there are cases in which it thus acts is certain; it often acts as a nutrient in the child by promoting osmose in the right direction, and in the child it seldom acts on the secreting organs to such an extent as to impoverish the blood.

These double actions in contrary directions are at the basis of all osmotic changes, and in their action in the body we see how beautifully osmosis is adapted to maintain the balance of the absorbing and secreting processes. When the osmotic balance is lost we have disease, and when it is restored by medicine (calomel) we have health.

In ptyalism the action of calomel on the bowel is checked, and its osmotic effects thrown upon other secreting organs, such as the salivary glands; the kind of action, *i. e.*, the *direction* of the osmotic current, is, however, the same, for in ptyalism we continually observe the absorption of material from the tissues into the blood. The effect of mercury upon the quantity of fibrin in the blood is not at all adverse to the correctness of our theory; but want of space forbids us to enter on this question here.

9. *Tetrachloride of Carbon as an Anæsthetic.*—Mr. T. NUNNELEY, Surgeon to the Leeds Infirmary, states that he has experimented with this article, which is being recommended as a safe and effectual anæsthetic, and is induced to publish the results, as in his hands it has proved the reverse of what it is claimed to be. The tetrachloride of carbon used is composed of Cl_4C_4; its specific gravity 1.61, with a boiling point of 171°. Its vapour is very heavy.

Mr. N. thinks that his experiments show that tetrachloride of carbon as an anæsthetic to be used in practical medicine is certainly inferior to several others which we possess, and that it is not likely to supersede the use of them. "That it possesses decided anæsthetic properties, is certain; which, indeed, if the first proposition in the essay before referred to be true, as I fully believe it to have, by the experiments there related in detail, been proved to be, we should *à priori* anticipate; but it would appear, even in this respect, to be inferior to the three other fluids which I have named: chloroform, the chloride of olefiant gas, and the bromide of ethyl; while it is much less manageable than any of them, and far more dangerous, particularly than the two latter substances; for, if an animal be not fully under the influence of it, the creature is not rendered unconscious, nor insensible to pain; while, if it be so, it is very likely never to recover them. The boundary between insensibility and death appears to be so narrow and ill defined as in practice not to be capable of regulation. When once the dose of any of these agents is such that the heart ceases to beat or air to be inspired, I believe death to be imminent. Beyond exciting a continuation of these two functions (and whatever will do this is valuable), I have no faith in anything which has been suggested. In my opinion, we have no antidote for an overdose of any anæsthetic, and no remedy, except the exhalation of it from the blood as this is brought into contact with the atmospheric air.

"Hence the importance of choosing that substance which is the most manageable, the least inimical to the peripheral terminations of the nerves, and, is the most rapidly removed from the blood. For that this class of substances act rather locally upon the terminal nervous nerve-fibres, than, as many good physiologists assert, solely upon the central mass is, in addition to the fact of their acting solely upon the part of a living animal to which they may be diretly applied, strongly confirmed by the increased heat which is felt in the most distant parts of the body, as in the rabbit's ears, and the much freer flow of blood which the capillaries then give out when the fluid has been absorbed by blood and thus carried to them. No change appears to be effected in the blood itself by the inhalation of these agents. So far as I am able to judge, it is the mere carrier of them.

"I perhaps may state that I think it probable the tetrachloride of carbon will be found useful, when the diluted vapour is cautiously inhaled, in certain cases of relaxed bronchial membrane, which often are the sequela of more acute attacks, and which so persistently remain in changeable weather. When I inhaled it, I was annoyed by this condition, every morning expectorating three or four lumps of carbonaceous mucus, and some during the day. Since the inhalation, this has altogether disappeared, and the little irritation of the membrane has also gone."—*British Medical Journal,* June 15, 1867.

10. *Therapeutic Value of the Different Constituents of Cubebs.*—Prof. BERNATZIK has administered these various principles in cases of gonorrhœa, in order to ascertain their respective values. The results which he has obtained differ very widely from those which he had anticipated. From the fact that the ingestion of the volatile oil of cubebs leads to the presence of a large quantity of resinous matter in the urine, he had inferred that the oil is the principal active ingredient of the drug, as it is, undoubtedly, the substance to which the peculiar taste is due. However, a medical man affected with a recent gonorrhœa took two drachms of the oil daily for some days, and continued the treatment for three weeks without any good result. The conclusion that the oil possesses no therapeutical value in gonorrhœa was confirmed by experiments, in which the resinous substances obtained by oxidation of the oil were injected into the urethra in cases of gonorrhœa. These resinous substances resemble those found in the

urine after ingestion of the oil. They proved inert, failing altogether to produce any amelioration in the disease.

The cubebin, and the soft resin left after the removal of the cubebin, were next administered to patients with gonorrhœa. Each of these substances was found to be entirely deficient of curative power.

On the other hand, the cubebic acid turned out to have a decided therapeutical value in recent cases of gonorrhœa. The crystallized acid was made into pills, each containing a grain and a half. The patients began by taking from five to twenty of these pills daily, the number being increased every day. Of five patients to whom cubebic acid was administered, three were cured completely within six days; and in the remaining two the discharge was very much lessened, so that a few injections sufficed to remove it. In a case of chronic gonorrhœa, however, the administration of the cubebic acid failed entirely. Moreover, cubebic acid was in one case employed in combination with magnesia, and in another as cubebate of soda. These preparations did not give very satisfactory results. Mixtures of cubebic acid and of the volatile oil were given to other patients, and produced a diminution of the disease; this is ascribed by Bernatzik entirely to the cubebic acid. From these experiments Bernatzik concludes that the following preparations of cubebs would be preferable to all others:—1. "*Cubebæ oleo æthereo privatæ in pulvere subtili.*"—Simple distillation, although it does not completely remove the volatile oil, at least takes it away to a sufficient extent to enable the residue to be administered in adequate doses without inconvenience. He proposes to give from two to four drachms of this preparation in the form of an electuary, several times a day. The quantity taken during the twenty-four hours ought to be from 750 to 1000 grains, for the cubebic acid would only form about four per cent. of it. 2. "*Extractum Cubebarum resinosum.*"—This would be obtained by digesting the preparation last named, for a considerable time, with ninety per cent. alcohol. Cubebic acid would constitute more than a fourth part of the extract thus obtained, so that the daily dose would be about 120–160 grains. 3. "*Acidum resinosum Cubebarum.*"—The cubebic acid itself. The best way to administer it is in the form of pills, made up with soap and pulv. altheæ, the resin being first melted in a hot mortar, and some alcohol being added to it while in the liquid state.—*Biennial Retrospect Syd. Soc.*, 1867.

MEDICAL PATHOLOGY, SPECIAL THERAPEUTICS, AND PRACTICAL MEDICINE.

11. *Pathology of Functional Nervous Disorders.*—Dr. C. HANDFIELD JONES, in a recent contribution (*Lancet*, July 6, 1867) to this subject, concludes with the following observations, which are well worthy of attention:—

"1. The study and appreciation of the different kinds and qualities of morbid nervous action seem to be of fully as much importance as any necroscopic examination. The latter must always present to us chiefly the *ultimate* results of morbid processes, which have been going on often for a very long period, and can reveal to us very little of the actual nature of the processes themselves.

"2. Amid the manifold varieties of morbid nervous action, there seem to be two principal types, which we meet with both in the peripheral and central districts. One of these, hyperæsthesia, displays itself in many familiar examples, as the so-called hysterical breast, the irritable testis, the photophobic eye, the exquisitely sensitive uterus or stomach, and so on. These are instances in which the morbid nervous action is either situated in the peripheral nerves, or at any rate does not extend higher than the associated tertiary centres. Mania, delirium ferox, many cases of hypochondriasis, of hysteria, and epilepsy, afford instances in which a quite similar disorder seems to affect the primary or secondary centres. The other type is anæsthesia, which may show itself peripherally, as analgesia, loss of tactile faculty, or of appreciation of temperature or of electricity. Its peripheral character is very apparent, when, as is not uncommon, it affects tracts of definite extent not corresponding to the distribution of a single or several nerves, and does not affect the subjacent muscles. Centrally anæsthesia may be traced in states of melancholia, of low muttering delirium, of hydrencephaloid coma, and probably in many cases of pernicious ague with coma.

"Lastly, I would say that hyperæsthesia and anæsthesia appear to be essentially due to primary changes in the nervous tissue, the result of various poisons, miasms, or imponderable influences. Not that I would affirm the hyperæsthetic or anæsthetic conditions of the nervous tissue to be always independent of hyperæmia or anæmia; but I would express as strongly as possible my conviction that the amount of blood-supply remaining constant, the quality of nervous action may vary extremely, and *vice versâ.*

12. *On Spectral Illusions of the Senses.*—The *Edinburgh Medical Journal* for July last contains a highly interesting paper on this subject by Dr. Robert Paterson, in which he endeavours to investigate the causes of these illusions, to explain how they occur and how they are produced, and to show the pathological conditions most liable to give rise to them, and to describe the tests to be applied to distinguish illusions from realities.

In illustration of the subject he directs attention :—

"I. To illusions of the senses, and the manner of testing them.

"II. To illusions of the senses, as they are to be distinguished from the delusions of the insane, on the one hand, and vivid dreams on the other.

"III. To illusions of the senses having their origin—1st, in the brain; 2d, in the structures of the eye; and 3d, in external impressions made during certain states of mental excitement.

"IV. To the pathology of illusions."

A number of remarkable cases of illusions of the senses are related. The following are the more important of his conclusions :—

"1st. That illusions of the senses have their origin in certain derangements of the brain connected with sensation and perception.

"2d. That the pathology of illusions consists of two different states of the membranes and brain itself—that of congestion, and that of diminished supply of blood. The latter being by far the most common, as in those from advanced age.

"3d. That illusions of the senses are also liable to arise from morbid substances in the blood itself, or the absorption into it of foreign ingredients.

"4th. That in persons of sane mind and common intelligence, illusions of the senses can be, and are generally detected as such, by the reason, and by various tests which the reason supplies—differing thus from the delusions of insanity, which are believed by the individual to be real.

"5th. That images of sudden and vivid mental origin, or objects about which the mind has become over-excited, are liable to present themselves to the different organs of sense in the form of illusions.

13. *Relations of Chorea to Insanity.*—M. Thore has published (*Ann. Med. Psych.*) an important paper on this subject. He relates two cases in which distinct symptoms of insanity supervened on a chronic attack. The first of these is of great interest, because the chorea itself occurred as a complication of acute articular rheumatism. The patient was a young lady, who experienced an attack of general acute rheumatism, with pleurisy and endocarditis. Coincidentally with the subsidence of the pains she began (twenty-four days from the commencement of the illness) to be affected with choreic movements, chiefly of the left arm and of the face. Two days later, alarming hallucinations of sight, hearing, and feeling occurred; for two or three days these were very distressing. The mental symptoms and the chorea diminished simultaneously, but the patient remained abstracted and timid for some days. The chorea disappeared about nineteen days after its first occurrence, and only a little weakness remained; a week later the patient was quite well. The other case of Thore was that of a needlewoman, who, ever since an attack of typhus, which she experienced when

eleven years old, had been melancholy and depressed. Menstruation had come on at the age of sixteen in a regular manner, although she was chlorotic; but a year afterwards she caught cold at her period, and the menstrual flow was suppressed. Three weeks later choreic movements attacked the lower extremities, and subsequently the upper; they were especially strong on the left side. The chorea and the general agitation increased during the next six weeks, when, at the height of the disorder, visual and auditory hallucinations of a gloomy kind appeared, especially in the evening. There was difficulty of speech, incoherence of ideas, and melancholy, with a tendency to suicide and constant thoughts about it. In the course of another six weeks the chorea, the agitation, the thoughts of suicide, and also the hallucinations, began to leave the patient. Simultaneously with the restoration of the menses the cure was complete.

It has long been established, by the facts recorded by Marcé, Trousseau, Brierre de Boismont, Warin, Bricheteau, and also by the histories of the chorea epidemics of the middle ages, that various kinds of intellectual and emotional insanity may occur in cases of chorea. The mental disturbances may vary from slight affections of the emotions or the will to hallucination, mania, melancholia, and even imbecility. The two cases recorded by Thore are each interesting as connecting the chorea and the mental affections with an acute disease. In the first case acute rheumatism, which is known to have so frequent a connection with chorea, was actually present at the time of the outbreak of choreic symptoms. Wherever the rheumatic complication is present it is important to distinguish, in any mental aberrations which may occur in this, between mere delirium, with coma or convulsions, symptoms which acute rheumatism alone may easily produce, and distinct hallucinations or other signs of important mental disturbance which are here in question. The second case is interesting on account of the pre-existing state of mental depression which appears to have been left by an attack of *typhus* which happened so long as six years previously, and also because the mental disturbance took the form of *melancholia*, a comparatively rare complication of chorea. The chlorotic condition of the patient, too, is noteworthy.

The general opinion of Thore on the subject of the relationship of chorea to its occasional mental complications is that the latter can hardly depend to any great extent upon it. He thinks that simple chorea is rarely so complicated, and that mental affections are for the most part caused by coincident diseases, *e. g.*, rheumatism, typhus, or chlorosis.—*Biennial Retrospect*, 1867.

---

14. *Morbid Anatomy of Tubercle.*—MM. HÉRARD and CORNIL, in their published work on pulmonary phthisis, have entered upon the study of the morbid anatomy of tubercular matter. They have established microscopically, and in a manner which they believe to be incontestable, that the yellow caseous masses, which were considered by Laënnec and those of his school, to be tubercular, are only lobular pneumonias in which the exudation products have undergone a granular fatty degeneration; and that there is no other tubercle than the miliary semitransparent or opaque granular matter, a primordial lesion, specific and truly characteristic of the diathesis.—*Brit. & For. Med.-Chir. Rev.*, July, 1867, from *Journ. de Méd. et de Chirurg. prat.*, March, 1867.

---

15. *Fatty Embolism.*—In Schmidt's *Annals* for October, 1866, is published a tolerably complete paper by MEISSNER, on thrombosis and embolism. Experiments related by Dr. Bergmann show that the fat contained in the circulatory system follows the sanguinary current, or passes through the walls of the vessels and becomes diffused through the cellular tissue. Professor Wagner thinks that, in addition to pyohæmia, a cause of fatty embolism is to be found in great shocks, causing the rupture of the marrow in the bones, and of the fat-cells. Henry Müller recognizes a third cause in the fatty degeneration of the arteries present in Bright's disease. A man, aged 39, given to drink, died of pneumonia accompanied by violent delirium. At the autopsy, a double pneumonia accompanied by gangrenous bronchitis was discovered, with the renal changes of Bright's disease, fatty degeneration of the ciliary arteries, the vessels of the pons Varolii, and the cerebellum. The capillaries were completely obliterated by

concretions formed of fat and epithelial *débris*. Busch, of Kœnigsberg, reports a case in which fatty embolism occurred throughout the capillaries, and coma and death followed thirty-six hours after a severe compound fracture of the leg from kicks by a horse. The embolisms brought on death, not by purulent infection and metastatic abscesses, but by the obliteration of an important part of the capillary system. To demonstrate these facts, Busch made a series of experiments on dogs, whose bones he fractured. He found the capillaries of the lung, even the largest vessels, full of fatty matter, without a trace of metastatic abscess in the lungs, and the remainder of the blood did not appear to contain fatty matter. In order to decide whether this reabsorption is effected by the capillaries or by the other vessels, Busch filled up the medullary cavity of the bone, extracting the marrow, with olive oil coloured with cinnabar; and he ascertained that the reabsorption is accomplished by sanguineous and lymphatic vessels of a certain size only. It was impossible to believe in a physiological reabsortion of the fat; for the fatty embolisms occurred in direct ratio to the intensity of the disturbance. Amongst forty-three cases of fatty embolisms observed by Busch, there were twenty-three fractures, three cases of periostitis or acute osteomyelitis, four of metritis, four abscesses of the fatty regions, one caries with congestive access, two tumours of the leg, one white swelling, two fatty degenerations of the arteries in Bright's disease. There were only four cases in which it might be positively affirmed that the embolism had its source in a purulent origin. In this case, the reabsorption was entirely accomplished by the lymphatics. The fat is not reabsorbed in a state of emulsion, but penetrates direct by the opening of the injured vessels; this is amply demonstrated by the experiments of Weber and Busch.—*Brit. Med. Journ.*, August 24, 1867.

16. *Organic Change of Structure of the Hair produced by Syphilis.*—Mr. Erasmus Wilson, in a paper read before the Royal Medical and Chirurgical Society (June 11, 1867), stated that the diseases of the hair at present known to us are chiefly such as result from an excess or deficiency of nutrition. Only one instance has been heretofore distinguished as being due to alteration of structure—namely, tinea or phytosis; but to this the author proposes to add another, in which the cause of disturbance is syphilis, or rather the syphilitic cachexia. In a case of constitutional syphilis, accompanied with trichorrhœa of the hair of the head and alopecia, the hairs of the beard presented some remarkable phenomena. The shaft was blackened and nodulated from point to point, and at these spots broke through with the most moderate force. Under the microscope the diseased parts were found to be some constricted and some enlarged into a kind of fusiform bulb; they consisted of a dark cylinder inclosed in a transparent cortical envelope, the dark cylinder being composed of nucleated cells, pigmentary matter, air cavities, and crystalline fragments, and being continuous above and below with the medulla, of which it seemed to be an enlarged expansion: while the transparent envelope was a thin layer, which represented the fibrous portion and the cuticle of the hair. The dark cylinder was, in fact, an arrest of development of the hair at its cellular stage, and constituted the chief bulk of the diseased portion of the shaft, the fibrous portion being reduced to a mere shell. The soft cellular structure now described explains the brittleness of the hair, its tendency to break easily and to split in a longitudinal direction, many of the diseased hairs being fissured to a considerable extent. As in other syphilitic affections of the cutaneous surface, the accumulation of pigment was remarkable, while the whole of the pathological change may be referred to exhaustion of power and function consequent upon the syphilitic cachexia.—*Med. Times and Gazette*, July 26, 1867.

17. *Hypodermic Injections of Sulphate of Quinia in the Treatment of the Fevers of Algeria.*—In an elaborate investigation, M. Jules Arnould discusses the hypodermic employment of sulphate of quinia in Algerian fevers of a malarious and periodic type. He strongly advises this method of using quinia, and refers to a large and successful experience in support of his recommendation. At the same time, this plan should not supersede the administration by the stomach, whenever this can be done without inconvenience to the patient. In

the majority of cases, however, the functions of the stomach are early impaired, and it either rejects the medicine by vomiting, or absorbs it imperfectly and slowly. Often, also, it is necessary to give emetics, and thus the administration of quinia is interfered with. M. Arnould mentions, among the chief additional advantages of hypodermic injection, the relatively smaller dose required, which seems to be about two-thirds, and this is of importance where large quantities of an expensive drug are used; the greater rapidity of effect; the certainty of absorption; the avoidance of many unpleasant draughts; and the slighter quinism (tinnitus aurium, deafness, and cephalalgia) which is caused. The main disadvantage is the action on the subcutaneous cellular tissue, which may, however, be reduced to an insignificant minimum by careful preparation of the solution. The nearer this approaches to a neutral fluid, free of suspended particles, and without coagulating action on albumen, the less will be the irritation. Neutral sulphate of quinia dissolved in twelve parts of water, by the addition of a few drops of sulphuric acid, is the solution which seems to possess the fewest disadvantages.—*Ed. Med. Journ.*, June, 1867, from *Bull. Gén. de Thérap.*

—

18. *Strychnia in Epilepsy.*—Mr. Walter Tyrrell expresses (*Med. Times and Gaz.*, May 18, and August 24, 1867) his belief that in "strychnia we possess a drug which will always control the excitability of the medulla oblongata, and restrain the attacks of convulsion." Large doses of the medicine, he says, must be given to produce the favourable results. "In some of the cases the doses may appear formidable, but I feel confident that with care and watchfulness no ill effects need follow their administration to the epileptic. In such cases the system appears to lose its susceptibility; and the drug even in large doses produces none of the ordinary signs of disagreement. In no case have I seen it produce any mischievous excitement or irritation; and I may state that in one very severe case, still under treatment, I have carried the dose as high as one-fifth of a grain, taken twice daily, and this continued for nearly three weeks together, not only without its producing the slightest sign of irritation, but on the contrary the most marked diminution in the frequency and violence of the attacks. The following case, although the attacks had but recently come on, is interesting as showing how rapidly the beneficial effect of strychnia is often gained, no attacks having supervened after two doses (each of one-twelfth of a grain) had been taken.

H. R., aged 29, has been of late years much exposed to heat in China, Singapore, and Japan; had congestion of the liver in March, 1865; was invalided home in June, 1865; since which time he has been living at home, under treatment for enlargement of the liver, using iodide of potassium and iodine ointment locally. On May 22 of this year—a very cold snowy day—he imprudently stayed out all day fishing, and at dinner that evening was seized with a violent epileptic fit, accompanied with great convulsion; this was followed by other attacks at the following intervals: May 25, three fits, at intervals of one hour and a half; May 30, a fit in the evening; June 1, two fits, with six hours' interval; June 2, one fit in the evening. On June 5 he arrived in Malvern, and I prescribed for him one-twelfth of a grain of strychnia twice daily, allowing him to continue his potash in rather increased quantity. On the morning of the 6th he had three fits, during the first of which I was present; they were very convulsive, and produced an extremely prostrating effect on his mind—so much so, that, even after the ordinary stupor had passed off, he was unable to answer the simplest question without consideration and great hesitation. It is needless to give a daily report of this case. I increased the dose of the strychnia to one-eighth of a grain; he had no further attacks; and his return to health, both bodily and mental, although gradual, was most perfect. He is now at the seaside, and may be considered to all intents and purposes convalescent. In this case it was curious to observe how the inclination to an attack (which occurred several times during the early treatment of the case) yielded at once to a slight increase in the strength of the dose. I may say that in this case I found the use of ice to the nape very useful, insuring quiet sleep, and also allaying a frequent tendency to irritability."

19. *Seton to Neck in Diabetes.*—Dr. Buttura relates (*Gaz. Méd. de Paris*, No. 27, 1865) a case of saccharine diabetes of ten years' duration, in which, after employing various remedies unsuccessfully, he applied a seton to the neck. As suppuration became established the sugar disappeared from the urine, the patient regained strength, and ultimately made a perfect recovery, remaining in good health eight months after the removal of the seton.—*Biennial Retrospect*, 1867.

20. *Thermometric Observations in Pneumonia.*—The collective results of all the observations so far published on the thermometry of pneumonia appears in the following sketch, by Kocher ('Behandl. d. croup. Pneum. mit Veratrumpräparaten,' Würzburg, 1866), of the normal cause of the fever in this disease. The commencement of pneumonia is announced with a rare constancy by *shivering*, with a simultaneous increase of *temperature;* the shivering is the surest starting-point for the calculation of the date of the disease. The initial temperature is so high that it is not commonly exceeded in the whole further course (40°—39° Cent.). As the greatest febrile exacerbation occurs daily at noon, it appears that two thermometric examinations per day are not sufficient. When the fever has once reached a given height it commonly maintains itself at that level, with moderate remissions and exacerbations, till the commencement of defervescence. In the height of the disorder the temperature varies, on the average, between 39° and 40° Cent., and there is ordinarily one remission and one exacerbation in each 24 hours. The stage of high fever is commonly broken by one remission which is more marked than the usual morning remissions which precede and follow it; in some cases there may be, not one, but several such principal remissions. After the principal remission the temperature may follow three courses—either it reaches its old level at the next exacerbation, or may fall short of it, or may pass beyond it. The case is very rare in which the fever altogether vanishes for a time, and then once more undergoes recrudescence. The final defervescence is announced by a critical fall of the temperature, which usually occurs from 12 to 48 hours previously; in cases with *rapid crisis*, where the temperature becomes normal in as little as 24 hours, the fall is continuous; otherwise the daily alterations come in as a disturbing influence.—*Bienn. Retrosp.*, 1867.

21. *The Temperature in Cholera.*—Dr. L. Guterbock, of Berlin, as the result of his observations during the recent outbreak of cholera, gives the following conclusions: 1. In the cold stage the temperature is lowered in the head and extremities to a degree scarcely equalled in any other disease. 2. In the cold stage the temperature of the cavities of the trunk (vagina, rectum), the highest in the body, are alone worthy of trial in determining the general temperature. 3. In the cold stage in most cases (whether it be followed by death or recovery) the internal temperature of the body is elevated, rarely normal, still more rarely diminished, without causes as yet discerned during life or in the dead body. 4. In the cold stage the temperature rises usually as death approaches; an increase after death does not appear to occur. But cases occur in which there is no increase of temperature in the agony, the cause of this difference not being explained. 5. With the occurrence of simple reaction there is no elevation of temperature; rather usually a slight diminution of the internal parts, while the external parts get warmer. 6. In the cases of protracted reaction (protracted asphyxia) the whole temperature sinks usually below the normal. 7. The inflammatory sequelæ induce usually a marked increase of the temperature. 8. During complete re-convalescence the temperature is sometimes high without apparent cause.—*Virchow's Archiv*, Jan. 1867.

22. *Pleurisy in Children.*—Drs. Steiner and Neureutter make some remarks (Prag. *Vierteljahrsch.*) on this subject, based upon 27 observed cases. Pleurisy, in such degree that it can be diagnosed clinically, is rare in children, yet the pleura frequently partakes in various diseases of the lungs and of more remote organs; hence the apparent contradiction between clinical observers and morbid anatomists as to the frequency of the disease. Pleurisy with liquid effusion is

the rarer; generally it is primary, and runs an acute course; the younger the child the less will be the amount of exudation. Pleurisy with proliferation of connective tissue is more common, and generally secondary and of protracted course; not infrequently, however, at any period of childhood, there occurs a mixed form, or sometimes even the two above-named varieties at once, one being developed in each pleural sac; finally, the older the child the more the *ensemble* of symptoms wears the appearance of pleurisy. Widening of the intercostal spaces on the affected side is only serviceable to diagnosis in the older children. More authentic is percussion, the weakened voice-thrill, and the increased resistance of the thorax is a most valuable sign, although not so constant as in adults; the dulness produced by pleurisy is more intense than that of pneumonia, except when both processes are present at once; finally, the weakness or entire absence of respiratory murmur, the weakened voice-sound, and the distant-sounding bronchial breathing, allow us to recognize a pleuritic effusion. On the other hand, pleuritic friction sounds and the displacement of neighbouring organs are rarely available for diagnosis. Of the functional symptoms, quick pulse, high temperature, dyspnœa, and cough, are variously prominent, according to the age of the child, the cause and form of the disease, and the nature of the complications. The site of the pain is, in children up to six or eight years old, almost constantly in the scrobiculus cordis; very young children only show pain in their countenance on being moved. Other nervous symptoms are only occasional in simple pleurisy, more frequent when there are pneumonic complications. Termination by complete reabsorption of the fluid effusion is quite the rule; the process is often completed in simple pleurisy, even with considerable effusion, in a few days; in other cases the remaining products, in the form of layers of lymph, adhesions, &c., by their contraction produce curvature of the spine; or otherwise, if there be frequent relapses and a gradual increase, may under circumstances prove the most powerful cause of pulmonary tubercle. Such children seldom recover perfectly; they have frequent attacks of bronchial catarrh; their complexion is pale, with a tendency to yellowness, they have palpitation of the heart, and great fatigue after slight exertion. The termination of pleurisy in empyema is in children generally less dangerous than in adults. Prognosis is more favourable in primary than in secondary pleurisy, and in the latter the degree of danger is to be measured by the severity of the primary pleurisy; but the prognosis is fatal in secondary pleurisy in the course of pyæmia.

The treatment of pleurisy in children is not different in principle from that of the same disease in adults.—*Bienn. Retrosp.*, 1867.

SURGICAL PATHOLOGY AND THERAPEUTICS, AND OPERATIVE SURGERY.

23. *Treatment of Incised Wounds with a View to Union by the First Intention.*—The doctrine was taught by John Hunter and his pupils that the blood effused from an incised wound often constituted the bond of union. But Prof. Syme, in 1825 (*Ed. Med. Journal*), asserted that the retention of blood between cut surfaces was the great obstacle to their adhesion. The means advised by the Professor to procure union by the first intention were "to delay the closure of the wound until the oozing from it appeared to have ceased; to apply pressure along the course of its sides, and to place some bibulous material over the lips." In a recent article (*Lancet*, July 6, 1867), Prof. Syme states: "The observations of M. Pasteur with regard to the effect of atmospheric atoms in causing decomposition, which have led to Professor Lister's treatment of wounds and abscesses, now established in Glasgow and Edinburgh, and certainly the most important improvement in surgical practice of recent times, has led to a complete revolution of ideas on the subject.

"In cases of bruise, fracture, dislocation, and even operations of tenotomy, large quantities of blood are frequently effused more or less deeply under the integuments without causing any bad effect, and quickly disappear by means of absorption. How, then, does it happen that blood collected in the cavity of a wound should be productive of so much mischief? It can only do so, as Mr. Lister has shown, through the decomposing influence of atmospheric air, loaded with its myriads of organic atoms, and. therefore, if protected from this agency, would be no more hurtful than in the circumstances just mentioned. He has accordingly found, as stated in the preceding numbers of this journal, that wounds of the most formidable character may be divested of all their alarming features by means of carbolic acid, applied so as to prevent the impure air from entering.

"This remarkable fact has led me to consider the expediency of resorting more frequently than heretofore to the use of 'torsion' for the suppression of hemorrhage."

Prof. S. now thinks that *torsion* "may in many, if not in all cases, be employed with advantage, instead of the ligature. In order to perform the process effectually, it is necessary that the artery should be seized by catch-forceps, and twisted until they become loose. It has been alleged that such a liberty with the vessel must cause it to slough, and thus disturb the adhesive action. But as this objection is altogether theoretical and contradicted by experience, it is unworthy of notice."

He relates two cases to substantiate the facts: "1st. That torsion effectually restrains the hemorrhage of ordinary-sized arteries.

"2d. That its action upon them does not prevent union by the first intention.

"3d. That protection from the air prevents decomposition of the blood."

---

24. *New Method of Treating Compound Fracture, Abscess, etc.*—The Nos. of the *Lancet* for March 16th, 23d, 30th, April 27th, and July 27th of the present year contain a series of very important papers by JOSEPH LISTER, Professor of Surgery in the University of Glasgow, on this subject. Professor Lister ascribes the frequent disastrous consequences in compound fractures, and from which simple fractures have an immunity, to the access of the atmosphere through the external wound in the former accidents, which induces decomposition of the blood effused around the fragments and among the interstices of the tissues. This fluid thus loses by putrefaction its natural bland character, and assumes the properties of an acid irritant, occasioning both local and general disturbance. The manner in which the atmosphere produces decomposition of organic substances, as Professor Lister remarks, has had a flood of light shed on it by the philosophical researches of Mr. Pasteur, who has demonstrated by thoroughly convincing evidence that it is not to its oxygen or to any of its gaseous constituents that the air owes this property, but to minute particles suspended in it, which are the germs of various low forms of life, long since revealed by the microscope, and regarded as merely accidental concomitants of putrescence, but now shown by Pasteur to be its essential cause, resolving the complex organic compounds into substances of simpler chemical constitution, just as the yeast-plant converts sugar into alcohol and carbonic acid.

A beautiful illustration of this doctrine seems to him to be presented in surgery by pneumothorax with emphysema, resulting from puncture of the lung by a fractured rib. Here, though atmospheric air is perpetually introduced into the pleura in great abundance, no inflammatory disturbance supervenes; whereas an external wound penetrating the chest, if it remains open, infallibly causes dangerous suppurative pleurisy. In the latter case the blood and serum poured out into the pleural cavity, as an immediate consequence of the injury, are decomposed by the germs that enter with the air, and then operate as a powerful irritant upon the serous membrane. But in case of puncture of the lung without external wound, the atmospheric gases are filtered of the causes of decomposition before they enter the pleura, by passing through the bronchial tubes, which, by their small size, their tortuous course, their mucous secretion, and ciliated epithelial lining, seem to be specially designed to arrest all solid particles in the air inhaled. Consequently the effused fluids retain their original characters unimpaired, and are speedily absorbed by the unirritated pleura.

Applying these principles to the treatment of compound fracture, bearing in mind that it is from the vitality of the atmospheric particles that all the mischief arises, it appears that all that is requisite is to dress the wound with some material capable of killing these septic germs, provided that any substance can be found reliable for this purpose, yet not too potent as a caustic.

"Carbolic acid," Professor Lister says, has proved "in various ways well adapted for the purpose. It exercises a local sedative influence upon the sensory nerves; and hence is not only almost painless in its immediate action on a raw surface, but speedily renders a wound previously painful entirely free from uneasiness. When employed in compound fracture its caustic properties are mitigated so as to be unobjectionable by admixture with the blood, with which it forms a tenacious mass that hardens into a dense crust, which long retains its antiseptic virtue, and has also other advantages."

Professor Lister's method of treating abscesses is based on the same antiseptic principle as that for compound fractures, and the material employed is essentially the same, but differently applied in accordance with the difference of circumstances. In an unopened abscess generally no septic organisms are present, so that it is not necessary to introduce the carbolic acid into the interior. "Here the essential object is to guard against the introduction of living particles from without, at the same time that a free exit is afforded for the constant discharge of the contents. The mode in which this is accomplished is as follows:—

"A solution of one part of crystallized carbolic acid in four parts of boiling linseed oil having been prepared, a piece of rag from four to six inches square is dipped in the oily mixture, and laid upon the skin where the incision is to be made. The lower edge of the rag being then raised, while the upper edge is kept from slipping by an assistant, a common scalpel or bistoury dipped in the oil is plunged into the cavity of the abscess, and an opening about three-quarters of an inch in length is made, and the instant the knife is withdrawn the rag is dropped upon the skin as an antiseptic curtain, beneath which the pus flows out into a vessel placed to receive it. The cavity of the abscess is firmly pressed, so as to force out all existing pus as nearly as may be (the old fear of doing mischief by rough treatment of the pyogenic membrane being quite ill-founded); and if there be much oozing of blood, or if there be a considerable thickness of parts between the abscess and the surface, a piece of lint dipped in the antiseptic oil is introduced into the incision to check bleeding and prevent primary adhesion, which is otherwise very apt to occur. The introduction of the lint is effected as rapidly as may be, and under the protection of the antiseptic rag. Thus the evacuation of the original contents is accomplished with perfect security against the introduction of living germs. This, however, would be of no avail unless an antiseptic dressing could be applied that would effectually prevent the decomposition of the stream of pus constantly flowing out beneath it. After numerous disappointments, I have succeeded with the following, which may be relied upon as absolutely trustworthy. About six teaspoonfuls of the above-mentioned solution of carbolic acid in linseed oil are mixed up with common whitening (carbonate of lime) to the consistence of a firm paste, which is in fact glazier's putty with the addition of a little carbolic acid. This is spread upon a piece of sheet block tin about six inches square; or common tinfoil will answer equally well if strengthened with adhesive plaster to prevent it from tearing, and in some situations it is preferable, from its adapting itself more readily to the shape of the part affected. The putty forms a layer about a quarter of an inch thick; it may be spread with a table-knife, or pressed out with the hand, a towel being temporarily interposed to prevent the putty from sticking to the hand or soiling the coat-sleeve. The tin thus spread with putty is placed upon the skin, so that the middle of it corresponds to the position of the incision, the antiseptic rag used in opening the abscess being removed the instant before. The tin is then fixed securely by adhesive plaster, the lowest edge being left free for the escape of the discharge into a folded towel placed over it and secured by a bandage. This dressing has the following advantages: The tin prevents the evaporation of the carbolic acid, which escapes readily through any organic tissue such as oiled silk or gutta percha. The putty contains the carbolic acid just sufficiently diluted to prevent its excoriating the skin, while its substance serves as a reservoir of the acid during the intervals between the dressings. Its oily nature and tenacity prevent it from being washed away by the discharge, which all oozes out beneath it as fast as it escapes from the incision; while the extent of the surface of the putty renders it securely antiseptic. Lastly, the putty is a cleanly application, and gives the surgeon very little trouble; a supply being daily made by some convalescent in a hospital, or in private practice by the nurse or a friend of the patient; or a larger quantity may be made at once, and kept in a tin canister. The dressing is changed, as a general rule, once in twenty-four hours; but if the abscess be a very large one, it is prudent to see the patient twelve hours after it has been opened, when, if the towel should be much stained with discharge, the dressing should be changed, to avoid subjecting its antiseptic virtues to too severe a test. But after the first twenty-four hours, a single daily dressing is sufficient. The changing of the dressing must be methodically done, as follows: A second similar piece of tin having been spread with the putty, a piece of rag is dipped in the oily solution, and placed on the incision the moment the first tin is removed. This guards against the possibility of mischief occurring during the cleansing of the skin with a dry cloth and pressing out any discharge which may exist in the cavity. If a plug of lint was introduced when the abscess was opened, it is removed under cover of the antiseptic rag, which is taken off at the moment when the new tin is to be applied. The same process is continued daily till the sinus closes.

"The results of this treatment are such as correct pathological knowledge might have enabled us to predict. The pyogenic membrane has no innate disposition to form pus, but does so only because it is subjected to some preternatural stimulus. In an ordinary abscess, whether acute or chronic, the original cause that led to suppuration is no longer in operation, and the stimulus that determines the continued pus formation is derived from the presence of the pus pent up in the interior. When an abscess is opened in the ordinary way this cause of stimulation is removed, but in its place is substituted the potent stimulus of decomposition. If, however, the abscess be opened antiseptically, the pyogenic membrane, freed from the operation of the previous stimulus without the substitution of a new one, ought, according to theory, to cease to suppurate, while the patient should be relieved from any local or general disturbance caused by the abscess, without the risk of irritative fever or hectic.

"Such, accordingly, is the fact. Abscesses of large size have, after the original contents have been evacuated, furnished no further pus whatever, the discharge being merely serum, which in a few days has amounted only to a few drops in the twenty-four hours. Whether the opening be dependent or not is a matter of perfect indifference, the small amount of unirritating fluid being all evacuated spontaneously by the rapidly contracting pyogenic membrane. At the same time, we reckon with perfect certainty on the absence of all constitutional disturbance.

"The putty of the strength above recommended, though it generally fails to excoriate the skin, sometimes produces this effect when long continued. In such case it may be reduced in strength so that the oil contains only one part to five or six without disadvantage when the discharge is very small in amount.

"The application prevents the occurrence of cicatrization in the little sore caused by the incision, and perpetuates a trifling discharge from it. Hence it is impossible to judge whether or not the sinus has closed, except by examining it from time to time with a probe, which should be dipped in the antiseptic oil, and passed in between folds of the antiseptic rag. This may seem a refinement, but if we could see with the naked eye a few only of the septic organisms that people every cubic inch of the atmosphere of a hospital ward, we should rather wonder that the antiseptic treatment is ever successful than omit any precautions in conducting it.

"The putty used in treating abscesses has proved very valuable in simplifying the treatment of compound fracture, and enlarging the range of its applicability, and also in dealing with incised wounds on the antiseptic principle."

---

25. *Epiphysary Disjunctions.*—Prof. R. W. Smith, in his admirable address on surgery delivered at the recent meeting of the British Medical Association in

Dublin, called attention to these injuries. The reason for this he stated to be "the numerous instances in which I have seen errors of diagnosis committed regarding them; the serious results of such mistakes; their being either but slightly noticed or altogether omitted in our systematic works on surgery; the absence of any special treatise on the subject; and the ignorance respecting them displayed by the continental writers. Even Nélaton, who may be truly said to wield at present the sceptre of surgery in France, has said, that the materials for a complete exposition of these injuries are wanting; that we have nothing to deal with but assertions unsupported by proofs and cases destitute of value because destitute of details; and he sums up his brief remarks by the erroneous assertion, that the signs which attend them are the same as those which indicate the existence of fractures in their immediate vicinity. Moreover, in the *Gazette des Hôpitaux* for the year 1865, there is recorded a discussion at the Surgical Society of Paris, in which some of the most distinguished members stated that these injuries could not be diagnosed with certainty, while others (including Chassaignac) doubted that they ever occurred. In my opinion, they constitute a class of injuries, the diagnosis of which can be formed (by the surgeon familiar with the anatomy of the epiphysis) with more facility and a greater amount of certainty than that of any other variety of fracture. Moreover, they possess this special peculiarity (at least, as regards the shoulder, elbow, wrist, and ankles), that, although they are accompanied by many signs and symptoms, the aggregate of which establish the nature of the injury which the bone has sustained, there is a single sign which, by itself, is pathognomonic of the disjunction of the epiphysis. * * *

"When the surgeon is called upon for his opinion respecting the nature of injuries occurring in the vicinity of the larger joints in early life, he will find a knowledge of the anatomy of the epiphysis of the greatest importance. And yet it is a description of knowledge seldom imparted to the student; the anatomical teacher usually passing over lightly or altogether the peculiarities which characterize the osseous system in the young subject.

"I have elsewhere pointed out the error committed by Vidal and other writers, in supposing that the tuberosities of the humerus belonged to the shaft of the bones, and shall now endeavour to show that a similar error has been committed with respect to the lower epiphysis of the humerus, and that those authors who have written upon the subject of injuries of the elbow-joint have confounded with each other fractures *above* the condyles and disjunction of the epiphysis, from ignorance of the anatomical fact, *that the lower epiphysis of the humerus does not include the condyles, which belong entirely to the shaft of the bone.* The epiphysis includes nothing but the trochlea and the capitulum. The fundamental mistake of placing fracture through the line of the epiphysis among *supra*-condyloid fractures (as has been done by Malgaigne, Vidal (de Cassis), Dupuytren, and others), has involved the equally glaring error of distinguishing these two injuries from luxation of both bones backwards by the same diagnostic sign; viz., the loss of the normal relation of the olecranon process to the condyles of the humerus.

"In the *Gazette Médicale* for 1834, Rognetta has published a series of elaborate memoirs upon the traumatic divulsion of the epiphysis; but, when speaking of that of the lower extremity of the humerus, he says, that the condyles are detached and drawn backwards along with the bones of the forearm."

Professor Smith, having read extracts from the works of the different authors alluded to, proceeded to say: "The preceding extracts are sufficient to show that disjunction of the lower epiphysis of the humerus is an accident which has hitherto been confounded with fracture directly *above* the condyles, an error from which it may, I think, be inferred that the exact line of junction of the epiphysis with the shaft is not generally known to surgeons. At all events, it is manifest that this line has been supposed to traverse the bone *above* the condyles; whereas the anatomical fact is, *that those processes belong exclusively to the shaft of the bone, and form no portion whatever of the epiphysis, which comprises only the capitulum and the trochlea,* the capitulum, or radial portion, being developed long before the trochlea, or ulnar portion; a fact, the knowledge of which is of practical importance in the diagnosis of fracture through the line of junction of the epiphysis with the shaft, or in other words, infra-condyloid fracture.

"The signs which characterize this lesion are such as to permit of its being readily confounded with fracture above the condyles, or with luxation of the forearm backwards. For instance, the forearm is flexed, the hand is in a middle position between pronation and supination. The olecranon loses its normal relation to the condyles, the breadth of the joint is increased from before backwards, the lower end of the humerus projects in front, and two osseous tumours can be felt posteriorly.

"As the loss of the normal relation between the olecranon and the condyles renders the separation of the epiphysis peculiarly liable to be confounded with dislocation of the radius and ulna backwards, I shall briefly mention the signs, by availing ourselves of which we materially lessen the chances of confounding it either with luxation or with fracture immediately above the condyles.

"In the case of disjunction of the epiphysis, the transverse diameter of the tumour which can be felt projecting in front is equal to that of the opposite humerus, measured anteriorly from condyle to condyle. In this respect, the injury differs from fracture above the condyles. Again, the outline of this osseous tumour is rounded, presents to the feel none of the irregularities of an ordinary fracture, and upon its inferior surface neither trochlea nor capitulum can be distinguished. But the most striking feature in which it differs from luxation, and which I consider pathognomonic of separation of the epiphysis is, that when the joint is examined posteriorly two osseous prominences are seen and can be felt distinctly; they are both placed above and behind the plane of the condyles, but are themselves situated (if the patient be not more than six or eight years of age) nearly upon the same level. At a more advanced age, the distance between them increases in consequence of the increased development of the interval which is formed by the olecranon.

"At no period of life, however, at which it is possible for the accident in question to happen, is the vertical distance between the two tumours so great as it is found to be between those which, in cases of luxation of both bones backwards, constitute so marked a feature of the injury. In the latter accident the distance averages an inch and a half, while in the former it seldom exceeds three-quarters of an inch; the external tumour in this case being formed, not by the head of the radius, but by the capitulum of the humerus, still surmounting the head of the radius. There is a cast of this injury upon the table, taken from the arm of a boy aged twelve, who was under the care of Dr. Hughes in 1847. He was thrown down with great violence, and having, in the act of falling, stretched out his arms to save himself, the boy who threw him down fell with all his weight across the back of the extended limbs. I have never had an opportunity of examining *post-mortem* a joint which had sustained this accident, but I have seen, under the care of the late Dr. Hutton, in the Richmond Hospital, a patient in whom the injury was compound, the extremities of the radius and ulna, surmounted by the epiphysis of the humerus, projecting through a large transverse wound.

"Enough has been said to show that implicit reliance is not to be placed upon the loss of the normal relation between the olecranon and the condyles as a means of distinguishing between luxation of the forearm backwards and fracture of the lower extremity of the humerus, and I think I have proved that there is an accident of the elbow, in which the bones of the forearm lose their natural relations to the condyles, and yet that accident is not necessarily a dislocation, but may be a fracture through the line of the lower epiphysis of the humerus.

"I shall dismiss the consideration of this injury by stating as concisely as possible the points of resemblance and dissimilarity between it and the two injuries with which it is liable to be confounded, viz., fracture immediately *above* the condyles, and luxation of both bones of the forearm backwards.

"The symptoms which belong to it, in common with fracture above the condyles, are the following: Shortening, crepitus, the removal of the deformity by extension, and its tendency to recur when the extending force is relaxed; the presence of an osseous tumour in front of the joint; the increase in the antero-posterior diameter of the elbow. It differs from the supracondyloid fracture in the greater transverse breadth and regular convex outline of the anterior tumour; in the existence of two tumours posteriorly; in the loss of the normal relation of the olecranon to the condyles. It resembles dislocation of both bones of the forearm backwards in the following particulars: The transverse diameter of the anterior tumour is the same in each case; so also is the antero-posterior breadth of the elbow; in both the olecranon ascends above the condyles, the limb is shortened, and two osseous prominences can be distinguished posteriorly. It differs, however, from luxation in the existence of crepitus, in the tendency of the deformity to recur, and in the circumstances of the anterior tumour being destitute of trochlea and capitulum, and the two posterior tumours being nearly on the same level.

"The disjunction of the lower epiphysis of the tibia is undoubtedly among the rarest in this class of injuries. I am not aware of any well-authenticated example of it having been placed upon record, with the exception of one that I published myself in 1860. A cast of the limb in this case lies on the table, and beside it another of a luxation of the tibia forwards on the ankle. The resemblance which they bear to each other is, indeed, very striking.

* * * "I think we are tolerably safe in saying that the pathognomonic sign of this injury is, that the internal malleolus preserves its natural relations to the foot, but not to the leg or outer ankle; while, in the case of luxation of the lower end of the tibia forwards, the reverse occurs, the normal bearings of the inner ankle to the foot being lost, while those to the leg are preserved.

"Having, in my work on *Fractures*, written at some length upon the subject of disjunction of the superior epiphysis of the humerus, I shall upon the present occasion allude to it very briefly. I have already mentioned the anatomical error into which some have fallen, of supposing that the tubercles of the humerus formed a portion of the shaft of the bone; and it has been to them a matter of surprise that, in cases of separation of the epiphysis, osseous union should occur—the head of the bone being, according to their statement, detached from all connection with living structures. Vidal (de Cassis) has observed that the occurrence of osseous union would be easy to conceive, if the head of the bone formed one body with the tuberosities. Had M. Vidal examined in the young subject the situation of the line of the epiphysis, he would have learned the simple anatomical fact that, in the injury under consideration, the tubercles formed a portion of the superior fragment; and that the epiphysis comprised not only the head of the bone, but likewise the entire of both tubercles, with that portion of the bicipital groove which is situated between these processes; and he would not have stated, as he has done, that, in cases of separation of the epiphysis, the *lower* fragment was acted upon by the supraspinatus and infraspinatus, for he would have seen that these muscles were attached to the superior fragment.

"Fracture of the humerus through the line of its superior epiphysis is an accident of frequent occurrence; but it is not difficult to recognize, for the deformity which accompanies it is of a very striking character; and its most remarkable feature is an abrupt projection situated just beneath the coracoid process, and caused by the upper end of the lower fragment or shaft of the bone, drawn inwards by the muscles constituting the folds of the axilla. There is but little displacement as regards the length of the bone; for the extremity of the inferior fragment is seldom drawn so far inwards as to enable it to clear completely the surface of the superior.

"This remarkable and abrupt projection does not present the sharp irregular outline of an ordinary fracture. On the contrary, it feels rounded, and its superior surface is smooth and slightly convex. The axis of the arm is directed downwards, outwards, and backwards. By pressing the projection of the lower fragment outwards, and directing the elbow inwards, the deformity can be easily removed, but of course recurs when the parts are abandoned to the action of the muscles. In short, the separation of the superior epiphysis of the humerus is so marked an injury, that no moderately well informed surgeon will be likely to confound it with any other incidental to the shoulder. Its pathognomonic sign is the infracoracoid projection, so well seen in the numerous casts upon the table.

"The separation of the lower epiphysis of the radius is also an injury of frequent occurrence, and is interesting from its liability to be mistaken for Colles's fracture, or for fracture of both bones close to the wrist. Our systematic works are remarkable for the paucity of the information they contain respecting it. Malgaigne speaks of it as the most common of all the epiphysary disjunctions; yet he has given no description of its external signs, or of its anatomical characters. He has merely alluded to the cases mentioned by Cloquet, Roux, and Johnston. The injury resembles Colles's fracture in the loss of the power of rotation, in the existence of a palmar and a dorsal tumour, and in the increase of the antero-posterior diameter of the limb at the seat of injury (not always, however, well marked); but differs from it in the absence of that singularly distorted and twisted appearance so characteristic of Colles's fracture, and which is owing to the lower fragment of the radius being drawn to the side of supination, as well as displaced backwards. The epiphysis passes directly backwards, without any tendency to supination. There is no elevation of the styloid process; so that the radial border of the forearm does not present the curved outline so frequently seen in Colles's fracture. In the last named injury, the dorsal tumour is usually more evident than the palmar, and the sulcus which limits it above passes obliquely downwards and inwards; but, when the lesion of the bone traverses the line of junction of the epiphysis with the shaft, the palmar tumour is by far the more striking of the two; and both tumours take a transverse direction, so that there is none of the appearance of obliquity which so many cases of Colles's fracture present. It is more readily confounded with fracture of both bones close to the wrist; there being in each case, occupying the same position, and presenting to a certain extent the same form, an anterior and a posterior tumour. There is a similar increase in the antero-posterior diameter of the forearm, and a similar impairment of the functions of the limb. In the case of fracture of both bones, however, or (to speak more accurately) separation of the radial epiphysis and fracture of the lower end of the ulna, the deformity is much greater, and resembles that observed in cases of luxation of the carpus backwards—an injury to which separation of the radial epiphysis bears but little resemblance. Moreover, in the latter injury (epiphyseal disjunction), the anterior tumour does not extend completely across the entire breadth of the forearm, being limited to the transverse extent of the radius; but the opposite is the case when the lesion implicates both bones. I have placed on the table a series of casts and preparations illustrative of disjunction of the lower radial epiphysis. Two of the casts represent the hands and forearm of a lad under twenty years of age, who, having fallen from a height, sustained a severe injury of the head, which proved fatal in a few days. In each forearm, the radius was broken close to the wrist-joint; and upon each side the external characters of the injury was as nearly as possible alike. The diagnosis of separation of the radial epiphysis was easily made, and was confirmed by the *post-mortem* examination. There was no fracture of the ulna upon either side."—*British Med. Journ.*, Aug. 17, 1867.

---

26. *Manipulation as a Means of Reducing Dislocations of the Hip, Complicated with Fractures of the Pelvis and other Injury.*—Mr. Jos. Bell, Lecturer on Surgery, &c., Edinburgh, in a paper in the *Glasgow Medical Journal* (July, 1867), remarks: "It is now a principle established by numerous cases, that by manipulation alone it is possible to reduce most dislocations, even of the hip-joint. In America this method is, by very many surgeons of eminence, preferred to the use of pulleys. It is exceedingly simple in application, requiring no apparatus, and gives the surgeon great power. While we can hardly go so far yet as to say that, by manipulation alone, *every* dislocation can be reduced, experience has proved that the failures in a series of cases treated by manipulation are less numerous than in an equal number treated by the pulleys, and that occasionally manipulation has succeeded after extension by the pulleys has failed. One almost unexpected danger attends the use of manipulation, namely, that we obtain so much power over the head of the bone, that we are apt to

change its position from one seat of dislocation to another, instead of into the acetabulum, and thus run a risk of injuring the soft parts in the neighbourhood of the joints, and especially of adding to the size of the rent in the capsule. . . .

"The manipulation treatment is of extreme value in cases where, from other injuries being present, it is either impossible or very dangerous to apply counter-extending force."

Mr. B. relates three cases of this kind in which he succeeded in reducing the dislocation by manipulation.

---

27. *Case of Dislocation of the Hip-joint into the Sciatic Notch, reduced by the American Method.*—This is the title of a case recorded in the *Glasgow Medical Journal* for July, 1867, by Dr. H. C. CAMERON, House Surgeon of the Glasgow Royal Infirmary.

The subject of it was a boy fourteen years of age. The patient having been put under the influence of chloroform, extension and counter-extension were made without success, after which Dr. C. tried the method by manipulation, which succeeded at the first attempt.

---

28. *Resections.*—M. SEDILLOT has written a letter to the Imperial Society of Surgery, on the regeneration of bone. It is too long for quotation entire, but of great interest. He contrasts the two principles of sub-periosteal resection in the following terms:—

One, to which Larghi has given the general name of sub-periosteal resection, is founded on the idea, that the periosteum detached and isolated in the condition of a sheath or a flap is able to renew or reproduce the subjacent bone from which it is stripped or raised.

The other principle which I have called sub-periosteal gouging or scraping, has for its principle, that it is the periosteum, *only when attached* to the bone, that is able to renew it; and that, in consequence, the bone beneath the periosteum should be husbanded and preserved with the very greatest care.

After invoking the aid of the Baconian method of research, M. Sedillot quotes numerous series of experiments which, in his opinion, are sufficient to prove that the periosteal flaps, if completely isolated from the subjacent bone, are unable to reproduce it; "and that the so-called method of sub-periosteal resection is founded on a deplorable illusion:" and gives his opinion that the chief use of preserving the periosteum at all, is to supply a mould for the bony matter which is left in his method of periosteal gouging, and which really reproduces the bone.—*Ed. Med. Journ.*, June, 1867, from *Gazette des Hôpitaux*, Jan. 19, 1867.

---

29. *Sub-periosteal Resections.*—The subject of sub-periosteal gouging, or scraping of bones and joints, still seems to excite much attention in France; at the meeting of Academy of Sciences, of December 24th, an interesting communication on the subject was made by M. Sedillot. While we must allow a little for the enthusiasm of a partisan, we must agree with M. Sedillot, that he has made up a good case for the powers of the periosteum,with its subjacent bone, in the restoration of removed bones or portions of bones. The experience of English surgeons is as yet, at least, quite opposed to the belief in the value of any attempt to save the periosteum in resections of joints, our difficulty being, in general, rather from the formation of too much new bone after a resection than too little. The following case, by M. LAROYENNE of Lyons, quoted as a favourable case of sub-periosteal resection of the elbow-joint, would be considered by no means a striking success here, simply from their being too much new bone, and, consequently, a limitation of flexion.

The elbow-joint of a man, æt. thirty-nine, had been diseased for twenty-six years. On admission, it was stiff, very painful, and showed several fistulous openings. Using the fistulous openings for his incisions, M. Laroyenne removed the bones of the articulation as far as possible without the periosteum—the tendon of the triceps was not cut, but left attached to the periosteum of the olecranon. The bones were removed apparently to sufficient extent, piecemeal. The arm was fixed in a semi-flexed position, in a starch bandage, open behind and to the inside. Eleven months after, when the patient was shown to the Society, the olecranon was found to be reproduced, the end of the humerus was filled out, the movements of flexion and extension were executed, extension being almost complete, and the flexion passing the right angle by some degrees, no lateral movement, the hinge being a true ginglymoid one, and *no* movement of rotation in the forearm.—*Edinburgh Med. Journ.*, June, 1867, from *Gazette des Hôpitaux*, Jan. 10, 1867.

---

30. *Section of the Nerves for Neuralgia.*—In *Schmidt's Jahrbuch* (1865), Martini sums up the operative surgery on nerves of recent times to the following effect. He refers, in the first place, to Gherini (*Ann. Univ. di Med.*, Ap. 1864, 188, p. 94), on the subject of operations for neuralgia. This author divides neuralgiæ into two kinds—anomalous and regular or essential. The former is of local origin, and curable by division of the affected nerve above the seat of the disease; the latter is due to some irritation of an unknown description, and resists all means hitherto put in use. The former description of neuralgia is caused by the formation of a hard painful kernel in the trunk of the nerve, or by cicatrization after a wound, or by a foreign body, or a severe and deep contusion. Of this form of neuralgia he refers to 8 instances—the first of an affection of the infra-orbital nerve of ten years' standing, caused by cold, and cured by section of the nerve in the infra-orbital canal; four cases of neuroma in the leg, all cured by excision; in two the tumours were developed in the substance of the nerves—true neuroma; in the others in their neighbourhood—false neuroma. The true neuroma can be distinguished from the false in consequence of its being always painful when touched or pressed in any direction, while the false is only painful when pressed in the direction which causes it to impinge on the nerve. The sixth case was that of a man whose leg had been amputated. The anterior tibial nerve appeared to have been implicated in the scar between the two bones, so that the least touch on this spot of the stump caused a sudden contraction over the whole body, as after an electric shock, and there was also neuralgic pain. These symptoms ceased at once on the subcutaneous division of the nerve. The seventh case was that of neuralgia of the whole limb, with tetanic contraction of the muscles of the face, after amputation of a toe. This was cured by reamputation. The eighth case was incomplete.

In contrast to these he gives numerous cases of essential or "regular" neuralgia, in which all kinds of treatment have been found unavailing, viz., 3 cases of facial neuralgia, recurring after the actual cautery, subcutaneous section of the nerve, and even division of all the parts down to the bone; neuralgia proceeding from a diseased toe, and extending to spasmodic contraction of the joints of the limb, recurring after two amputations and subcutaneous section of the nerve, and causing death by exhaustion; neuralgia in the knee of a young woman, persisting after amputation of the thigh and excision of a portion of the sciatic nerve, but disappearing after amputation of the hip (Mayor, of Lausanne), together with somewhat similar cases mentioned by Tyrrell, Bransby Cooper, and Marshall Hall; neuralgia of the hand persisting after amputation, subcutaneous injection of atropia and excision of a portion of the radial nerve; and neuralgia of the sole of the foot, exacerbated to a frightful degree by treatment with the actual cautery. In traumatic tetanus Gherardi has amputated three times with no benefit.

He dissuades section of the nerves in this "essential" form of neuralgia, or at least advises that it should be put off till every other means of treatment has been tried, especially electricity. In some observations on this work of Gherardi, by Legouest, at the Société de Chir. de Paris (*Gaz. des Hôp.*, 77, July, 1864), that surgeon observed that a case by Azam (*Journ. de Bord.*, 2 sér., ix. p. 289, Juil. 1864) supports Gherardi's views. The case was one of neuralgia in the stump of a flap amputation of the leg, accompanied with frightful epileptiform seizures. After various other forms of treatment, the peroneal nerve was first resected, and then, as this produced only slight and doubtful benefit, a piece was cut out of the sciatic nerve. This was productive of temporary cure; but the symptoms returned seven months afterwards, though in a milder degree, after a fall. M. Legouest believes that when this frightful affection follows amputation it is always when the flap method has been followed, and advises that in such amputations the ends of the nerves should be truncated. At the same debate two cases were brought forward in which Nélaton had operated on nerves—one was for neuroma of the median nerve, in which the tumour was removed, and the nerve, in doing so, was divided, but the ends united with two silver sutures. At the date of the report the functions of the nerve seemed to be restored, and the pain had ceased. In the other case a lady had been attacked with zona in the course of the sciatic nerve, accompanied by intolerable pain. No milder measures having proved of any avail, Nélaton took away an inch from the substance of the sciatic nerve, with the effect of producing paralysis of motion and sensation, but no relief to the pain. Richet and Voillemier supported Gherardi's opinion, that in this "essential" form of neuralgia section of the nerve is useless. Some account of the discussion which followed at the society may be found either in *Schmidt's Jahrb.* or in the *Gaz. des Hôp.—Bien. Retrosp.* 1867.

31. *Injury of Head without Aphasia.*—The following case, communicated to the Society of Practical Medicine by Dr. PIEDANNA, is of great interest, from the gravity of the accident, and the absence of any symptoms of aphasia. In many respects, it closely resembles that of the boy exhibited to the Medico-Chirurgical Society of Edinburgh about a year ago.

C. H. æt. nineteen, received a violent kick on the forehead from his horse, while he was endeavoring to free the reins which had got caught under the horse's tail, without leaving the box. He was thrown senseless on the road. He was there found by Dr. Piedanna, bathed in blood, with a wound on the forehead, exposing an immense fracture of the frontal bone, between the superciliary ridge and the frontal eminence, and which extended towards the temporal fossa. From this, cerebral matter was oozing in some quantity. The pulse was very slow and feeble. He was taken home, and the wound being carefully cleaned, Dr. P. endeavoured to raise the fragments of broken bone. The first attempt induced severe and general convulsive movements. The second succeeded in removing a large splinter of bone. After this, at least a teaspoonful of blood and brains escaped. A compress to the wound, and cold applications to the head were ordered, along with a soothing draught. In the evening, he was so feeble as to require sinapisms to the extremities.

Next day, after a purgative enema, the bodily heat improved. Pulse still only 42. Next day, he was feverish and vomited. Next day, slight general improvement; pulse 45. Vomiting had ceased, he was able to drink, and for the first time showed signs of consciousness, and *spoke quite distinctly.* From that date up to the twelfth day improvement was gradual. From the twelfth to the nineteenth, his general condition was stationary; but the wound began to granulate, and suppuration was free. From this time onwards, improvement was rapid, till the complete cicatrization of the wound on the fortieth day. He is now perfectly well, has no pain in the head, speaks as well as ever he did, and has no defect of memory.—*Edinburgh Med. Journ.*, June, 1867, from *Gazette des Hôpitaux*, Jan. 10, 1867.

32. *Spontaneous Fracture of Urinary Calculus in the Bladder.*—Mr. G. SOUTHAM, in a paper read before the surgical section of the British Medical Association at its late meeting in Dublin, described three cases of urinary calculi which appear to have been spontaneously fractured in the bladder, two of which occurred in his own practice, and one in that of Mr. Luke of the London Hospital. The calculi were single, and removed by lithotomy. Two of them were of hard, compact structure, consisting of lithic acid and oxalate of lime, and had evidently been broken some time previously to their removal by operation. The history of the cases showed that mechanical violence would not have caused their disruption, which Mr. Southam attributed to the generation of a gaseous agent in the calculi themselves, either from some chemical change in the earthy constituents, or to decomposing the animal mucus which forms their cementing material. The paper was illustrated by drawings of the different forms of fractured calculi, and also by preparations.—*Brit. Med. Journ.*, August 24, 1867.

M. Guérnot presented lately to the Surgical Society of Paris a specimen of spontaneously ruptured calculus taken from the bladder of a man aged 83. This spontaneous division of urinary calculus is so rare, he stated, that M. Civiale, in his extensive practice, had met with only two instances of it.

—

33. *Fatal Hemorrhage from the Gums after Scarification.*—Dr. James Young communicated to the Edinburgh Obstetrical Society the two following cases of fatal hemorrhage after scarification of the gums which occurred in his father's practice:—

"Case 1.—A child, æt. 20 months, presented no evidence of disease in any respect beyond the ordinary irritation from teething. The teeth already cut had each produced some disturbance, but without requiring scarification. With the first eye-tooth, some febrile symptoms were manifested. My father was sent for, and without the least hesitation he advised scarification of the gum, which was forthwith done. A sudden and rather profuse welling of florid blood immediately appeared, and not at once ceasing, as is usually the case, pressure with thumb and forefinger was applied. The hemorrhage seemed to be allayed, but on withdrawal of the finger, it continued to ooze up and filled the mouth. Nitrate of silver was applied steadily and pressure again, and yet the blood continued to flow. My father became somewhat anxious, and sent for me. We applied lint, moistened in a solution of the perchloride of iron and glycerine, with as much pressure as possible, and yet the hemorrhage continued. The last alternative was the hot wire, which was applied the same evening, after Sir James Simpson had seen the case. Next morning, although pressure had been kept up more or less during all the night, and the child fed on beef-tea and wine, with use of iron internally, the hemorrhage continued. After twenty-four hours' incessant oozing, the child became pale and exsanguine, and yet, extraordinary to say, the child lived for three or four days. Nothing had the least effect in checking the flow of blood, except the pressure, and only so during its application. There was no hemorrhagic diathesis; the child had never lost blood before, was perfectly healthy, and of healthy parents. The blood was florid. The question here arises, how deep should the scarificator be pressed into the gum, or should the gums be scarified at all, until the teeth are shining through? Scarification may be necessary when the tooth is not close at hand, and the same tooth may require to be cut repeatedly. I have known a case of this kind where the child was attacked with convulsions, which ceased from the incision of the gum; the wound healed up, and the convulsions returned not less than six times from the same tooth, and ceased every time after cutting the gums. Then, again, suppose the scarificator be placed deeply in the gum, is it possible that the small offsets or minute twigs of the dental or alveolar branches of the internal maxillary artery could bleed to such an alarming extent without some other cause? What that was, I leave my seniors to divine.

"The second case occurred at Holyrood; the only difference between that in this case it was the first molar tooth of the upper jaw, while in the first case it was one of the eye-teeth of the lower jaw. The child here was about 18 months old, and had neither in itself nor mother presented any symptom of a hemorrhagic tendency. The same result followed the scarification, the same treatment was pursued, and, I regret to say, it had the same painful issue. The child survived one week.

"*Sir James Simpson* thought such cases very uncommon. Mr. Robertson, he said, had been in the habit of using an instrument to produce steady pressure on the gum in cases of hemorrhage. In cases of umbilical hemorrhage, Dr. Churchill had proposed the use of sulphate-of-lime powder. He spoke of a case of umbilical hemorrhage he had seen with Dr. Moir—a child—where the umbilicus was transfixed with needle and suture. The hemorrhage ceased for a while, but returned. The perchloride of iron was applied, and the child recovered."—*Ed. Med. Journ.*, June, 1867.

OPHTHALMOLOGY.

34. *Embolia of one Branch of the Central Artery of the Retina.*—Dr. SAMISCH records (*Klin. Monatsblätter f. Augenheilkunde*, Jan. and Feb. 1866) the case of a man, 52 years of age, who came to him complaining of defective vision of the right eye, of such a kind that he could not see the lower part of any object that he looked at. The patient first discovered the defect two days previously, on waking in the morning; and a few days before that he had been using the right eye exclusively in shooting, so that its vision was then unimpaired. He connected his ailment with a gumboil that had formed about a right upper molar ten days before, and he had suffered no derangement of general health. Both eyes were emmetropic, and of normal acuteness of central vision, with presbyopia = $\frac{1}{24}$. In the right eye the lower half of the field of vision was almost entirely wanting. The defect was limited by a line passing upwards from the outer side, but nowhere reaching the horizontal diameter. Ophthalmoscopic examination of the inverted image showed the lower half of the retina of a milky whitish colour, through which the choroid was but dimly visible. This turpidity of the retina was bounded by a line that followed a course upwards and inwards, touching the border of the optic disk, but keeping at some distance from the macula lutea. The disk and its vessels were normal, but the descending arterial branch was distended from the point where it passed off the disk. The distension affected a length of the vessel equal to about half the diameter of the nerve surface, and ended abruptly. From this point the branch was visible as a thin white cord, which contained blood only at one spot, and was seen with difficulty in the turbid retina, although the corresponding vein was very plainly visible and increased in volume. A complete examination of the general health of the patient gave only a negative result, and the circulatory system appeared to be entirely free from disturbance.

Notwithstanding the absence of any cause by which the formation of an embolus could be explained, Dr. Sämisch was of opinion that the case admitted of no other diagnosis. The ophthalmoscopic examination afforded absolute evidence of a limited affection of the vessel, and, except embolia, some disease of the arterial coat was the only possible cause of the condition. But no disease of the arterial coat would be likely to produce sudden vascular obstruction in a previously healthy eye, or to diminish the calibre of the vessel. Dr. Sämisch gave a guarded and unfavourable prognosis, on the ground that, even if the circulation were eventually restored, either collaterally or by removal of the obstruction, the complete arrest of the supply of arterial blood to the affected part of the retina would very speedily work irreparable changes in its condition. There was no indication for treatment, and the patient remained under observation. After ten days blood could again be seen in the peripheral parts of the occluded artery, and this blood gradually approached the centre. There was, however, no improvement in vision, and after two months the condition still remained unaltered.

Dr. HIRSCHMANN records a very similar case to the foregoing, with the difference that the patient (an English nobleman, 55 years of age) had suffered during seven years from repeated attacks of articular rheumatism, and had a loud systolic murmur. The failure of vision had existed for six months when Dr. Hirschmann was consulted, and the condition was as follows: Manifest hypermetropia of both eyes, about = $\frac{1}{18}$ or $\frac{1}{24}$. Acuteness of vision, right about $\frac{1}{4}$, left more than $\frac{3}{4}$. With correcting lenses reads—right, Jaeger No. 5; left, No. 1. Left field of vision absolutely normal. Right, most of the lower half wanting. The defect is not bounded by a sharp line, but by an obscure belt, that is very narrow in the middle, and that increases in width on both sides, but most towards the inner. Measured at one foot from the board, the field of vision extends five centimetres below the fixing point, somewhat lower on the inner, much lower on the outer side. In the defective part there is not a trace of perception of light. The loss of vision occurred suddenly. patient was stooping, and was attended by a sensation as of fire in th

The ophthalmoscope showed that the ascending branch of the arteria centralis was obstructed on the nerve disk, and empty, or nearly so, beyond the point of obstruction. In one only of its twigs a very small thin column of blood was perceptible. No changes could be discovered in the optic disk or retina. As an experiment, Heurteloup's leech was applied three times, and produced an increase of central vision to ⅔ds, and perhaps a better filling of the partially obstructed twig in which the then column of blood had been noted. There was not the slightest enlargement of the field of vision.—*Royal London Ophthalmic Hospital Reports*, Vol. V., Part III.

---

35. *Tubercular Nodules in Choroid Coat of Eye.*—Dr. Cohnheim's observations, pointing to the very general, if not constant, occurrence of tubercular nodules in the choroidal tunic of the eye, in cases of acute miliary tuberculosis, afford an additional illustration of the assistance the physician may expect to derive from ophthalmoscopic investigations in the diagnosis of constitutional disease. Previously to January last, when that distinguished pathologist, at present the assistant of Virchow, first communicated a paper on the subject to the Berlin Society, only four cases of choroidal tuberculosis had been recorded in medical literature; so that it had come to be regarded more as an anatomical curiosity, without any claim to practical importance.

In the May No. of Virchow's *Archives*, Dr. C. has published careful details and an exhaustive analysis of seven *post-mortem* examinations in cases of acute miliary tuberculosis, in each of which genuine tubercular nodules were found in the choroidal tunics. Unfortunately, attention had not been directed to the eyes in any of these cases before death, so that no ophthalmoscopic examination had been made; but, in addition to those previously reported upon, they supply a sufficiency of material for a perfect anatomical history of the disease.

In every instance, at least seven other internal organs were the seat of tubercular eruption. The lungs were invariably affected, and, without exception, also the thyroid gland, which has thus forfeited the immunity it was believed to possess from the occurrence of tubercular growths.

The ages of the subjects ranged from six months to fifty-nine years. With one exception, both eyes were affected. In two cases, a solitary tubercle was found on one side; in the majority, from four to eight were seen; in one case, as many as forty were counted in one eye, and fifty in the other. They were disseminated all over the background, either singly or in groups, with occasional tendency to confluence. Where only a single nodule or very few were present, they were in close proximity to the posterior pole of the eye; in one case, just behind the macula lutea. The majority varied in size from 0.6 to 22 *millimètres* in diameter; all above 0.6 *millimètre* in diameter were distinctly prominent above the niveau of the choroid.

The smaller nodules were gray and semi-transparent; all exceeding 1 *millimètre* in diameter were opaque in a central spot, from fatty changes or granular disintegration of the small, round, large-nucleated lymphoid cells, representing their main anatomical constituents.

They grow towards the retina till they attain a diameter of 1 *millimètre*, giving rise to distinct prominence. They then commence to extend backwards into the lamina fusca; and the largest nodules produce distinct impressions on the concave surface of the sclerotic. As soon as the smallest tubercles referred to are visible to the naked eye, the possibility of their being discoverable by the ophthalmoscope depends only upon the state of the transparent media, retina, and epithelial layer of the choroid. Now, with one exception, when spots of retinal hemorrhage were observed, no other form of ocular disease coexisted; and in all cases where the choroidal tubercles had attained 1 *millimètre* diameter, rarefaction of pigment in the hexagonal cells had resulted to a degree sufficient to render the subjacent nodules distinctly visible. The larger nodules lay quite denuded of pigment immediately beneath the retina, but set in delicate rings, much darker than the surrounding tunics. Nodules below 0.8 *millimètre* in diameter were covered by unchanged epithelial cells, and therefore not visible prior to their removal. It is possible that the more favourable conditions obtaining during ophthalmoscopic illumination might nevertheless admit of their detection; and, should a retinal vessel happen to cross a nodule, the phenomena of parallactic dislocation which could be produced in consequence of the resulting prominence, amounting to one-fifth of a *millimètre* even in the case of the smallest tubercle, would be of material assistance for diagnosis. The diagnosis of acute miliary tuberculosis is known to be frequently beset with considerable difficulty; and as its recognition, although, in the present state of therapeutics, only for the sake of prognosis, is of extreme importance, the physician will not despise the aid which the ophthalmoscope may be expected to afford for his guidance, it being most probable that no case of the disease will be found to run its course without choroidal implication.—*British Med. Journ.*, June 29, 1867.

36. *Accommodation—Intraocular Pressure.*—VÖLCHERS and HENSON (*Centralblatt*, No. 46, 1866), by experiments on the eyes of dogs, confirm Helmhotz's theory of accommodation, thereby adducing evidence from the lower animals in its support. Adamük (*Centralblatt*, No. 36, 1866), by means of a manometer, the one extremity of which was introduced into the anterior chamber, has ascertained that the intraocular pressure is diminished by section of the cervical sympathetic; by atropia dropped on the conjunctiva; by opium, especially morphia, and by digitalin. The pressure is increased by extract of Calabar bean, introduced from the conjunctiva; by strychnia the ordinary pressure is doubled during tetanus; and finally by all irritants. Somewhat similar observations have also been made by Grünhagen.—*Journ. Anat. and Phys.*, May, 1867.

37. *Reproduction of the Crystalline Lens.*—From a pretty full *résumé* of an important paper, read to the Academy of Sciences on 28th January, 1867, by M. MILLIOT, we may extract a few conclusions. The experiments were very numerous, extending over two years, and were performed on sheep, dogs, cats, rabbits, guinea-pigs, rats, and frogs. Extraction was generally performed by the flap operation, aided by free division of the anterior capsule.

He has proved the fact incontestably, that in animals a regeneration or reproduction of the crystalline lens does frequently occur, even after complete removal. That this commences about the end of the second week after the operation, but is not completed till from 5 to 12 months, or even longer in aged animals. That the new lens is never so large as the old one. That sometimes the new one shows all the microscopic characters of the original lens; that more frequently it is an amorphous hyaline mass, which contains a small number of nuclei analogous to those of the cells known as the humour of Morgagni, sometimes fibrous tissue in laminæ, containing proliferating nuclei. Occasionally the cavity of the capsule becomes filled with vitreous humour, or, in cases where the iris has inflamed, with plastic lymph. That in human lenses affected by cataract, M. Milliot believes that except possibly in young subjects (which he has had no opportunity of verifying by dissection), there is no reproduction of the lens. This is due partly to the age of the patients, partly to the changes which have been shown to occur in cataract, in the powers of endosmose and exosmose of the capsule, and through it on the nutrition of the crystalline lens. He has still doubts on this subject, and thinks it possible that in those cases where, in young subjects, vision is good without a cataract glass, that there really may be a reproduction of the lens in whole or in part.—*Ed. Med Journ.*, May, 1867, from *Gazette Médicale de Paris*, Feb. 9, 1867.

[Drs. COCTEAU and LEROY D'ETIOLLE over forty years ago (see *Philadelphia Journ. Med. and Phys. Sciences*, 1827, vol. xiv. p. 384) instituted a number of experiments on rabbits to determine whether the lens, after removal, was reproduced, and they assert with an affirmative result. Dr. BARKHAUSEN, of Berlin, however, repeated their experiments (see *Lancet*, 1831, p. 615) with a different result.—ED.]

38. *Paralysis of the Ocular Branches of the Cervical Sympathetic Nerve.*—Mr. JONATHAN HUTCHINSON remarks (*R. Lond. Oph. Hosp. Rep.*, Vol. V., Part. II.): "But little has as yet been recorded in reference to the effects of paralysis of the cervical sympathetic nerve upon the function of sight.

Physiologists (Professor Bernard, Dr. Brown-Séquard, and Dr. Waller) have, by experiments, fully established the fact that paralysis of the radiating fibres of the iris ensues in connection with paralysis of the vaso-motor nerve (cervical sympathetic), and a certain number of cases are on record in which it has occurred as a symptom caused by aneurisms or other tumours in the neck. It has as yet, however, received but little notice from writers on diseases of the eye, and I am not aware of any records as to its effects on vision, excepting a brief notice in Professor Donder's work. (See pages 579 and 627; New Sydenham Society's edition.)

"The following is an enumeration of the chief symptoms which attend paralysis of this nerve:—

"1. Contraction of the pupil. [The myosis, even in a young person, is not of such a degree as to attract attention. The pupil is of the size which it would naturally be in a good light.]

"2. Immobility of the pupil. [This is almost absolute. The pupil neither dilates when shaded, nor contracts much further when exposed to light.]

"3. Retraction of the globe in the orbit.

"4. Narrowing of the palpebral aperture.

"5. Alteration (increase) of temperature in the parts affected.

"6. Dilatation of arteries.

"7. A slight difficulty in vision observed by the patient, both for near and distant objects, and especially when the light is bad.

"The cases which have come under my observation have been very various in respect to their cause and complication. Sometimes it is met with as the only symptom of disease of the nervous system present, at others I have found it in conjunction with paralysis of one or several of the cranial nerves, more especially the third, fifth, or sixth. In other cases it occurs from injuries to the spinal cord, or to the roots of the brachial plexus. The symptoms present vary considerably in connection with one or other of these complications. Thus, if there be paralysis of the third nerve at the same time, the pupil will not be contracted, but will be absolutely motionless in a state of moderate dilatation.

"Cases of paralysis of the radiating fibres of the iris are, I feel certain, frequently overlooked, owing to our habitually examining our patients in a good light. When well exposed to light the pupil of the sound eye contracts to the same size as that of the other, and there is no difference to be observed. It is only when the patient is taken into the shade, and the pupil of the sound eye dilates widely, whilst that of the other remains contracted as before, that our attention is arrested. If we see our patient for the first time in a dull light, the suspicion which crosses the mind first is certain to be that we have to do with a case of paralysis of the third nerve, and mydriasis as the result, but on bringing him to the light we find the supposed mydriasis disappear. I have several times made the two mistakes to which I refer, and have seen them made also by others.

"Inequality in the size of the pupils, the smaller one being the fixed one, is then the cardinal symptom of paralysis of the sympathetic, just as inequality of pupils with the larger one fixed is the cardinal symptom of paralysis of the third, as far as the supply to the iris is concerned."

---

39. *Remarkable Case of Recovery from an Extensive Incised Wound of the Eyeball.*—On the 2d of May Dr. Steffan was called to a girl, nine years old, who had injured her right eye a few hours before by a blow from a splinter of glass. By the time of his arrival, the free bleeding from the external wound had ceased, the eyelids were closed, and there was no pain. On carefully separating the lids he saw an incised wound, commencing on the cornea, about a line and a half from its inner margin, and just within the area of the pupil, and extending horizontally to the root of the nose. This wound had gone completely through the cornea, causing prolapse of the iris. It then divided the other coats of the eye, sclera, choroid, ciliary muscle, and retina for a length of about four lines; so that the eyeball must have been rolled outwards when the injury was received. Proceeding in the same direction, the wound passed on through the caruncle and lachrymal sac to the side of the nose, dividing all

the soft parts down to the lachrymal and nasal bones. At every attempt to open the eyelids the wound gaped, and gave exit to vitreous humour; the eyeball of course had collapsed. The absence of any indication of a foreign substance within the eye induced Dr. Steffan to aim chiefly at the closure of the scleral wound, so as to prevent further loss of vitreous humour. For this purpose a compressive bandage was applied, and a bladder of ice over it, and complete quietude was enjoined. In a few days, without any kind of reaction, the wound in the sclera had healed so perfectly as to be almost invisible, the anterior chamber had refilled, and the eyeball was restored to its natural dimensions; so that nothing appeared but a simple corneal perforation, with prolapsus iridis. The prolapsus was snipped off, and a slight pupillary exudation was counteracted by the fullest possible dilatation with atropia. The only visible trace of the injury was an adherent leucoma, a line and a half in length, on the inner side of the cornea. When the healing was complete, vision was perfectly natural. The wound of the lachrymal sac left a slight fistulous opening in the inner canthus, but this produced no inconvenience.

The case much resembles one recorded by von Graefe in the *Arch. f. O.*, Bd. I, 1 S. 406. In this, however, v. Graefe withdrew from the eye, through the scleral wound, a splinter of glass eight lines in length, and three lines broad at its broadest end. The patient (a boy) recovered perfect vision.—*R. Lond. Oph. Hosp. Rep.*, Vol. V., Part III., from *Klin. Monatsblätter, f. A.*, Jan. and Feb. 1866.

---

40. *Clinical Report on Herpes Zoster Frontalis seu Ophthalmicus* (*Shingles affecting the Forehead and Nose*).—Mr. J. Hutchinson, in a very interesting paper (*R. L. Ophthalmic Hosp. Rep.*, vol. v., pt. 3, Oct. 1866), says that he is persuaded this disease is more frequent than is generally supposed. At different hospitals a considerable number of examples of it have come under his care, which he has now grouped together.

"I have found," he remarks, "most surgeons very incredulous as to this disease, and free in assertions that they had never seen it, and that it must be extremely rare. My conviction is that it is often misnamed. It is often considered to be erysipelas. Three patients who came to me with the unmistakable marks of herpes on one side of the forehead had been treated for a disease which had been said to be erysipelas, and several others in my series had also had a similar diagnosis given. Yet it is easy enough to distinguish the one from the other, if attention be once drawn to their differences. Herpes frontalis is always limited to one side, never transgresses the medium line of the forehead and nose. It never affects the cheek, although there may be some sympathetic œdema of this part (œdema of contiguity). There is less general swelling of the skin than in erysipelas, and in some cases very little. The vesicles of herpes are smaller, more defined, more numerous, and altogether much more conspicuous and pronounced than are the bullæ of erysipelas. There is much more pain and much less constitutional disturbance in herpes than in erysipelas. The strictly unilateral character of the one contrasted with the irregular location of the other, is, however, the most reliable feature for the purpose of ready diagnosis.

"Herpes almost invariably leaves scars, often deep ones, and by the arrangement of these (unilateral) it is usually easy to recognize a patient who has suffered from the disease even years after its occurrence.

"For purposes both of prognosis and treatment, it is very desirable to make a correct diagnosis between herpes frontalis and erysipelas of the scalp. A patient with the former may be confidently assured that there is no danger; that the disease will subside after a time, and that he will have neither a relapse nor a recurrence. Two ladies who came to me scarred by herpes, believed that they had had erysipelas, and would be very likely to have it again, and were greatly relieved when told that they might go into the air as usual, and were quite certain never to have another similar attack. On the other hand it is well to warn a patient with herpes that very likely the eye may inflame, and that, if it does, serious mischief to the organ may result.

The case of James Morgan, the first, I believe, in which inflammation of the deeper structures of the eye (iris, &c.) had been observed, was under my care in 1861. Since then I have seen several cases in which the cornea, sclerotic and iris became involved in inflammation. As a rule, I think the eye does not inflame until the eruption is at its height, or already beginning to decline. In one case, however, a single nodule of lymph near to the pupillary edge showed itself in the early stage, and without any ulceration of the cornea. More usually the ulceration of the cornea is extensive, and often it prevents a satisfactory inspection of the state of the iris. There is always great congestion both of conjunctiva and sclerotic, and this congestion, as well as the corneal ulceration, is very slow in disappearance. The pupil, even when there is not much lymph visible, is always very sluggish, and in several cases I have found it impossible to make the iris act by atropine, even by strong solutions frequently repeated. I have never seen hypopyon in connection with this form of ophthalmia, nor does the other eye seem to suffer.

"According to my experience herpes zoster frontalis is more frequent in the aged than in the young, and also more severe. The liability of the eye to suffer also appears to be much greater in the old.

"When the disease has subsided, the eyeball is usually left somewhat anæsthetic, though perhaps at the same time liable to neuralgic irritability. In this it shares with the skin, which, although perhaps very painful, is always numb as regards common sensation. In the after stages the patients often complain that the skin feels 'numb and stiff like parchment.' I have often proved with the æsthesiometer that sensation was much less acute in the affected part than in the opposite forehead. This indeed might be expected from the disorganization of the papillæ which the scars imply. I think, however, that it exceeds that which this result may be supposed to explain, and that it is not improbably dependent also in part upon some change in the nerve trunk or nerve centre.

"Herpes zoster frontalis, like herpes zoster of the trunk, occurs but once in a patient's life, goes through regular stages of advance and decline, is never symmetrical,[1] confines itself accurately to the parts of skin supplied by certain known nerves of sensation, and lastly, is not contagious. Thus in some features it resembles an exanthem, in others a neurosis. From both these, however, it differs in most marked features; indeed as yet these forms of herpes stand alone as an unique type of disease, perhaps at once the most interesting and the most puzzling in the whole domain of pathology.[2]

"There can be little doubt that the local processes of inflammation in the skin and the eye are produced directly through the medium of the nerve, in this instance of the ophthalmic division of the fifth (some or all its branches). At what part of the nervous system the irritation begins, however, we are quite in the dark. I can see no argument in favour of the belief that it is produced by the vaso-motor rather than by the sensory trunks. It appears always to follow accurately the distribution of the latter. Not only is it a constant fact that but one division of the fifth nerve is involved, but it is a very common one to find only some twigs of the ophthalmic division affected. Thus very frequently the trochlear and nasal branches escape. I have never seen the converse, *i. e.*, the nasal and trochlear affected, whilst the frontal escaped. There must be some reason for this, and also for the curious fact that the second division of the fifth scarcely ever produces herpes, if we except the herpes labialis, which comes into a different category. We scarcely ever see the lower eyelid and the cheek affected by herpes.

"This singling out of one particular nerve-branch might seem to imply that the irritation, whatever it is, attacks the nerve-trunks after their subdivision. It is possible that it may be brought to bear upon them through the medium of the vaso-motor ganglia. This conjecture is very different from the one which would attribute the whole production and localization of the disease to vaso-motor filaments. Other arguments might be held to support the conjecture that the irritation starts from the cerebral ganglia of origin for the nerve concerned.

---

[1] I am aware that in exceedingly rare instances herpes zoster of the trunk does occur symmetrically, and in others, equally rare, twice in the life of the same patient. These exceptions are however so exceptional that they only serve to give the general rule greater prominence. I have, as yet, never known herpes zoster frontalis either to be symmetrical or to occur twice to the same patient.

[2] For a more full explanation of the nosological riddle which herpes zoster presents see a lecture by the writer in the third volume of the London Hospital Reports.

"As regards treatment, whilst our pathology is so uncertain, we can allege nothing with confidence. I have always been in the habit of ordering quinine, and using any simple local application which may seem most appropriate to the stage of the eruption. Lead lotion at first, or free applications of oil, or if the pain be very severe, of laudanum, are all useful. In a recent case Mr. Bowman has, I believe, performed subcutaneous section of the supra-orbital branch, and with some relief to the pain. Very probably section of this nerve would relieve the pain felt in the skin of the forehead, and the decision as to whether or not it can do this would clear up one little point as to its nature, for it is possible that after all the pain felt is produced by central changes, and is as regards the peripheral parts only 'a referred pain.'

"An attack of ophthalmic shingles often constitutes a very serious illness. It entails much severe pain, and although the vesicles will disappear in ten days or so, yet the pain may last much longer, especially if the eye be affected, or if the skin be deeply ulcerated. In a severe case the patient may be confined to bed for a week or a fortnight, and the irritability of the eye may last for months."

Mr. H. relates 18 cases, the average ages of them being 47 years. "Eleven were males and seven females. The right side was affected in five cases, the left in nine. In all the tract supplied by the frontal nerve (forehead and front part of scalp) was affected; in eight the side of the nose, also in six of the latter the cornea and iris inflamed. In none of the cases in which the frontal nerve *only* was involved did the eye inflame, whilst it suffered in all in which the nasal branch was implicated (as shown by eruption on the end of the nose). In two in which the trochlear branches were implicated, without the nasal, the eye did not inflame.

"The clinical fact that the eruption may appear on the cutaneous territories of certain branches of the ophthalmic division of the fifth, whilst others are free, appears to me of the utmost importance. To appreciate its bearing we must recollect the anatomical distribution of this nerve. The ophthalmic division of the fifth, a purely sensory (and trophic ?) nerve, after leaving the Gasserian ganglion, gives off a small twig to the tentorium, and then enters the orbit through the sphenoidal fissure. Just before entering this fissure, it has given off its nasal branch, and has then divided into frontal and lachrymal trunks. Between the Gasserian ganglion and its place of division it has received twigs from the cavernous plexus of the vaso-motor nerve, and very often a considerable branch of communication (to or from ?) has passed between it and the fourth nerve. The destination of the frontal branch is to the skin of forehead, anterior two-thirds of scalp, the eyebrow, upper eyelid, and adjacent part of nose. Its two trunks which supply these parts have received the names of supra-orbital and supra-trochlear branches. Now the territory most frequently affected in ophthalmic shingles is that of the supra-orbital nerve, and next to it comes that of the supra-trochlear. The frontal is often affected without the supra-trochlear, but the latter never suffers alone. Both are often affected without the other branches, and when this occurs the eye does not inflame. We have next to consider the lachrymal branch. This branch gives filaments to the lachrymal gland, to the conjunctiva, and lastly, to the skin of the upper eyelid. It is therefore not very easy to tell in any given case of ophthalmic shingles whether it is affected or not. It is difficult to tell whether or not the lachrymal gland is inflamed, and both the conjunctiva and the upper eyelid receive branches from other sources also. In any instance, however, in which the eruption is unusually free on the upper eyelid, and there is great swelling and much conjunctival congestion, we may safely believe that the lachrymal nerve is concerned. We have lastly by much the most important of the branches, as ophthalmic herpes is concerned. I allude of course to the nasal, or, as it is better named, the *oculo-nasal*. This nerve, soon after leaving the main trunk, gives off the long root of the ciliary ganglion, from which the short ciliary nerves pass to the iris. It next gives off the long ciliary branches, which run directly to the ciliary muscle and iris, and subsequently it divides into two branches, which supply the middle and tip of the side of the nose with sensation, under the names of infra-trochlear and external. It follows then, that to know whether or not the nasal nerve is concerned in an attack of ophthalmic shingles, we must look for vesicles on the side of the nose, especially near to its tip. My cases are as yet too few in number to authorize a confident statement, but thus far I have never seen the whole side of the nose affected without also witnessing inflammation of the eye, and I have never seen the eye inflame unless the side of the nose showed vesicles. This fact (if it be one) seems to give us a step towards a knowledge of the trophic nerve of the eyeball.

"It may, perhaps, be objected that the trophic disturbance resulting in iritis in connection with herpes, begins in the lenticular ganglion, and passes from it to the oculo-nasal nerve instead of, as I infer, in the opposite direction. This, however, is most improbable, for whenever the oculo-nasal nerve is affected in herpes, the other and larger divisions, frontal, &c., are also concerned, and these have no communication with the ciliary ganglion. If, further, the irritation began in the ganglion, instead of being taken to it by the branch from the oculo-nasal, then we ought to have cases in which the iritis is the earliest and most prominent symptom, which is not the case, the skin inflammation always appears first, and predominates in severity.

"Although unwilling for the present to allow speculation to lead me further, I must beg to warn against hasty inference from the fact, that sometimes only one branch of the ophthalmic nerve, and sometimes all are affected, that it is therefore probable that the disease commences in the nerve trunks after sub-division, rather than in the cerebral or ganglionic centres common to them all. Such an inference is surely most unfounded. The nerve tubules which are to be distributed as the 'frontal nerve,' for instance, are just as distinct from those constituting the nasal branch when they are bound up in one bundle and called collectively the 'ophthalmic nerve,' as they are subsequently when divided. There can be little doubt that whatever may be their mutual relations for convenience of transit, that they are perfectly distinct from one another from beginning to end. It is therefore easily comprehensible that a source of irritation beginning either in the Gasserian ganglion, or in the meso-cephale itself, may be restricted in its influence to one branch only.

"In almost all cases the tract of skin involved in the eruption remains for long partially anæsthetic. When the eye has been involved, the cornea frequently loses sensation, and never fully regains it."

MIDWIFERY.

41. *Quintuple Child-Birth.*—The following remarkable case of this is reported (*Med. Press and Circular*, August 28th, 1867) by Dr. T. W. Sproule. F. M., æt. 30, the wife of a labourer, and the mother of six children, was taken in labour at 5 o'clock A. M., about the end of the seventh month of her pregnancy. About 7 A. M. a small living child was born by breech presentation; "the existence of another child was immediately discovered, when the nursetender became alarmed and sent for the nearest medical man, but before his arrival five children, and all alive, were given birth to—three boys and two girls—at intervals of from five to eight minutes from each other. The placentæ, of which there were three, quite separate from each other, two of them having two umbilical cords each attached to the third one, were speedily expelled; no unusual hemorrhage or exhaustion followed. Four of the children survived an hour, and died within a few minutes of each other; the fifth, a female, and the last born, lived six hours, and was so vigorous that, notwithstanding its diminutive size, hopes were entertained of its surviving.

"The children, which I had an opportunity of examining, were all well formed and well nourished, and all very equal in size, about 12 inches long, and resembled very much in size and appearance, well developed six months' fœtuses. The mother of the children is progressing favourably."

---

42. *Placenta Prævia, Child Delivered through Placenta.*—Dr. GORDON communicated to the Edinburgh Obstetrical Society a case of placenta prævia in which he found it impracticable to separate the placenta from the uterus, his fingers being cramped, he, therefore, scratched through the placenta, and coming upon the child (whose position was normal), turned, and delivered, drawing it through its own afterbirth, which was also thrown off within five minutes. The child, which had all the appearance of being premature (probably eight months), was asphyxiated, but fortunately soon brought round by the aid of hot and cold douches and such usual remedies. The mother recovered.

Sir J. Y. SIMPSON remarked that in cases of placenta prævia, many children were brought through the placenta when it could not be pushed aside.—*Edinburgh Med. Journ.*, June, 1867.

---

43. *Removal of Intra-uterine Polypi.*—Sir J. Y. SIMPSON exhibited at the Edinburgh Obstetrical Society (Feb. 13, 1867) four intra-uterine fibroid polypi, which he had removed from three different patients within the last eight or nine days.

The first of these cases was an unmarried lady from England, who had suffered from hemorrhage for twelve years, and sometimes had been so greatly reduced by the discharge as to be invalided and bedridden for weeks. She was very white and blanched. The os uteri was opened up with sponge-tents, a polypus found in the uterine cavity, and its neck divided without difficulty with a small polytome. The removal of the polypus from the uterine cavity after its detachment was by no means easy, as it escaped readily from the vulselli and polypus forceps that were used to catch and extract it.

In the second case, an unmarried lady from Glasgow, the hemorrhage had only lasted fourteen months, but had been sometimes very excessive. The same means of diagnosis and treatment were used, and the same difficulty met with in attempting to remove the free polypus, which was of the size of a large filbert, through the small os. Ultimately the os was divided to allow of the possibility of extraction.

The third case occurred in a married patient in Inverness-shire, who had had great intercurrent menorrhagia for nearly eighteen months. Sir J. Y. Simpson visited her at her own home in Inverness-shire, and thought he detected the presence of polypi with the uterine sound; but as a long diagnosis with dilatation was required, she was removed to Edinburgh when her strength was sufficiently recovered. In this instance, after the os uteri was opened, first one semi-pediculated polypus was felt and removed, and then the presence of a second similar one was discovered high up in the uterine cavity, and detached by partially cutting through its pedicle, and then dragging it down with vulselli. In regard to these cases of intra-uterine polypi, Sir J. Y. S. added the following inferences:—

1. In such cases of intra-uterine polypi, the presence of the disease may be guessed by the increased size of the uterus, and particularly its cervix, which sometimes expands above as it does in a threatened abortion, and by a persistent and sometimes a great menorrhagia. Occasionally it can be felt by the uterine sound, used like a metallic finger, but usually not with any great certainty. The only certain mode of diagnosis consists in dilating the cervix uteri so as to feel the interior of the uterine cavity with the finger, and touch the polypoid cavity. He adverted to a case which he saw with Dr. Wood, many years ago, of a patient who died of hemorrhage from intra-uterine polypi. The autopsy in this case first suggested the idea of reaching and diagnosing the intra-uterine tumour by opening the cervix with some dilating body.

2. For this purpose, sponge-tents were suggested and used by him; and more lately Dr. Sloan proposed tangle-tents. He believes that tangle-tents are to be preferred when a slight dilatation, as for dysmenorrhœa, was required; but for

a greater degree of dilatation, when we require to introduce the finger and remove a polypus, sponge-tents are preferable.

3. In making the diagnosis, it is usually necessary to push down the fundus uteri with one hand pressed against the abdominal parietes, and by the forefinger of the other hand search the interior of the uterus.

4. In removing intra-uterine polypi, he had sometimes found torsion an easy plan, but the forceps must be strong in blade and joint to give the necessary power. Torsion succeeded best when the pedicle was small. When the pedicle was large and thicker, and when the tumour was only of a polypoid character, division, with the tenotomy knife, of the tissue covering of the thick neck, or even of the body of the polypus, greatly facilitated its extraction. A small polyptome, as in two of these cases, was sometimes the simplest method of dividing the pedicle; and perhaps a loop of a wire ecraseur might be passed over it to separate it, but usually not without much difficulty.

5. But our armamentarium was chiefly deficient at the present time in proper means to seize and extract the polypus after it was separated. Fibroid polypi are elastic, and readily jump out of the catch of any form of polypus forceps. Sir J. Y. Simpson had tried an improved form of lithotrite to lay hold of them, but it had also failed. Vulselli with very long teeth were difficult to open in the narrow uterine cavity, and the teeth were apt to catch hold of the uterine walls. The best instrument which he had yet found was a vulsellum provided in each blade with three small and short teeth; but he suggested to the Society whether some of the members could not invent a more fit and useful instrument for the purpose.—*Edinburgh Med. Journ.*, June, 1867.

44. *Cure of Ovarian Cysts without Operation.*—Dr. Courty states that no one could be less easily convinced than himself of the efficiency of any method of treating ovarian dropsy except ovariotomy. Two cases were, however, cured by him without operation. He classifies the remedies employed into,—1. Preparations of gold, especially the oxide, in doses of $\frac{3}{100}$th to $\frac{7}{100}$th of a grain; 2. Analeptics and tonics, as Vichy water, iron, quinia, etc.; 3. Abdominal friction, with iodides of lead and of potassium; 4. Diuretics, also applied by friction, chiefly squill, digitalis, and nitre; and, 5. Graduated compression of the abdomen by elastic bandages. The gold was prescribed in the pleasant form of tablet prepared with chocolate, and the frictions were made over all the body with soft woollen cloths soaked in tinctures of squill and digitalis, by which, it is worthy of note, marked diuresis was caused. The first case was of an unmarried woman, forty-three years old, with a large, probably unilocular, cyst of the right side, which had existed for four years. Under the above treatment, the tumour disappeared in a month, and there were no symptoms of a recurrence of the disease three years afterwards. In the second case, a young girl of twelve, with a large multilocular cyst, was treated on the same principle; improvement occurred in fifteen days, and a cure, which promises to remain permanent, was produced in six months. Dr. Courty mentions having seen this disease in a still younger patient under the charge of Professor Simpson, of Edinburgh.—*Edinburgh Med. Journ.*, June, 1867, from *Revue de Thérap. Méd.-Chirurg.*

MEDICAL JURISPRUDENCE AND TOXICOLOGY.

45. *Poison of the Cobra-di-Capella.*—The *Australian Medical Journal* contains some observations by Prof. Halford, of the Melbourne University, on the subject of snake-poisons, from which we extract the following:—

"The melancholy accident which so lately happened with the cobra-di-capella induced me to make some experiments and observations upon the action of the reptile's poison. When a person is mortally bitten by the cobra-di-capella, molecules of living 'germinal matter' are thrown into the blood and speedily grow into cells, and as rapidly multiply; so that, in a few hours, millions upon millions are produced at the expense, as far as I can at present see, of the oxygen absorbed into the blood during inspiration; hence the gradual decrease and ultimate extinction of combustion, and chemical change in every other part of the body, followed by coldness, sleepiness, insensibility, slow breathing, and death. The cells which thus render in so short a time the blood unfit to support life are circular, with a diameter, on the average, of $\frac{1}{1700}$ inch. They contain a nearly round nucleus of $\frac{1}{2800}$ inch in breadth, which, when further magnified, is seen to contain other still more minute spherules of living germinal matter. In addition to this, the application of magenta reveals a minute coloured spot at some part of the circumference of the cell. This, besides its size, distinguishes it from the white pus or lymph corpuscles. Thus, then, it would seem that as the vegetable cell requires for its growth inorganic food and the liberation of oxygen, so the animal cell requires for its growth organic food and the absorption of oxygen. The food is present in the blood, and it meets the oxygen in the lungs; thus, the whole blood becomes disorganized, and nothing is found after death but dark fluid blood—the fluidity indicating its loss of fibrin, the dark colour its want of oxygen, which it readily absorbs on exposure after death. It results, then, that a person dies slowly asphyxiated by deprivation of oxygen, in whatever other way the poison may also act, and, so far as the ordinary examination of the blood goes, the post-mortem appearances are similar to those seen after drowning and suffocation. I have many reasons for believing that the *materies morbi* of cholera is a nearly allied animal poison. I hope also to show the presence of the poison of our snakes in the blood of bitten and inoculated animals, and to make some experiments on the possibility of saving life."

The inhalation of oxygen has been suggested as a remedy in such cases.

46. *Microscopic Toxicology.*—Some years ago, Dr. GUY, Professor of Forensic Medicine in King's College, directed attention to the fact that many inorganic substances might be determined by their crystalline form. Helwig, of Mayence, subsequently showed that this mode of detection was also applicable to organic substances, especially the poisonous alkaloids. The method resorted to by these experimenters was to obtain crystals of the substances sought for, by sublimation. Prof. T. G. Wormley, whose splendid volume has been noticed (see p. 511 of this No.), has adopted a better method of obtaining crystals, viz., by precipitation, and has greatly extended our knowledge of the subject.

Dr. Guy has recently renewed his investigations, and published the results in a late number of the *Pharmaceutical Journal.* By improving on Dr. Helwig's process, and substituting a bit of porcelain and a glass ring, on which a microscopical slide may rest, for a depression in a piece of platinum foil, Dr. Guy has been able to watch the process more minutely and to regulate it more exactly. He has by this means been able to obtain characteristic crusts composed of crystals of strychnia weighing not more than $\frac{1}{3000}$ or $\frac{1}{5000}$ of a grain. Morphia gives equally characteristic results. For the examination of these crusts, Dr. Guy recommends a binocular microscope with an inch object-glass. But it is not to these crystalline forms alone that one need trust; the whole behaviour of the substance as it melts and is converted into vapour is eminently characteristic, and, when once deposited on the microscopical slide under the object-glass, the application of reagents may give still more satisfactory results. The reagents, however, which are here to be applied are not of the kind ordinarily employed. Colour tests under the microscope are, comparatively speaking, useless; those that give rise to peculiar crystalline forms are rather to be sought after. For instance, the crystals produced by the action of carbazotic acid on morphia are by themselves almost perfectly characteristic. These experiments should not, however, be undertaken for medico-legal purposes by one unskilled in their conduct, for the effects of the reagents themselves might be mistaken by the uninitiated for the result of their action on the substances under examination.

AMERICAN INTELLIGENCE.

ORIGINAL COMMUNICATIONS.

Recovery of a Still-born Child by means of an Electro-Magnetic Current. By JOHN H. PACKARD, M. D., of Philadelphia.

Mrs. X., a very healthy and well-developed married lady, about 25 years of age, was taken in her first labour at about 7 P. M., May 22, 1867.

Her pains becoming frequent and severe, I was called at 2 A. M. on the 23d. The bag of waters was very large, but flabby. I suspected a foot-presentation, but could not make it out until the waters had broken. One foot then came down; but the os was so slightly dilated, and I was so uncertain whether the part was not a hand, that I pushed it up again. As the labour progressed, the breech came down, the sacrum posterior, and the knees drawn up, so that the child became engaged with its sacrum and knees against the sacrum and symphysis pubis of the mother. Not succeeding in bringing down the feet, I tried with a blunt hook in the child's left groin, Mrs. X. lying on her left side, to sweep the whole of the presenting part down through the pelvis, but could not do so. At about 4½ A. M., after this state of things had lasted more than half an hour and no change seemed likely, I sent for assistance; but before the messenger returned, I found one leg yielding, and disengaged first it and then its fellow. The child, a very large one, was now delivered as far as the neck without much difficulty; in doing this I rotated it so as to bring the occiput anterior. But from the great size of the head another arrest took place at the vulva. Respiration having begun, but the pulsations of the cord being still vigorous, I made the nurse draw the fourchette backwards so as to give the child some air, and sought in every way to deliver the head. Failing with my hands, I applied Hodge's forceps, but could not succeed in using them without endangering the upper part of the child's thorax. At length, feeling the case to be a desperate one, I grasped the shoulders and brought the head away by main force. How long this struggle had lasted I do not know; the birth took place at about 6 o'clock.

The child lay perfectly flaccid, blue, and cold. I dashed brandy over it, and rubbed it vigorously, then cut the cord (pulsation in which was active), put the child in warm water, and after a minute or two wrapped it in a warm blanket. About ʒss of brandy was poured down its throat. The rubbing was kept up, and artificial respiration by Sylvester's method resorted to; still the efforts at breathing became less powerful and less frequent. Finally, I sent for my electro-magnetic battery (Neff's); one pole was applied to the nape of the child's neck, and the other kept moving gently about the lower margin of the thorax, while a very slight and intermittent current was passed. Soon the muscles of the chest began to act more strongly, and at length a vigorous cry announced the full expansion of the lungs. After this all went well. A slight laceration of the perineum, which healed kindly, was the only untoward result of my energetic interference.

Electricity has been mentioned by authors, but not with much favour, as a remedy in cases of still-birth. This case seems to me to testify so strongly in its favour as to be worthy of publication.

Gunshot Wound in the Chest: Successful Excision of Portions of Rib. By J. A. REAGAN, M. D., Run's Creek, N. C., Sept. 1867.

E. L., 3d Regiment, North Carolina, M. Q. U. S. V., was wounded in the chest while in the rebel lines, recruiting for his command, in August, 1863, and left on the spot for dead. The ball entered about two inches to the right of the spinal column; struck the fifth rib, tearing it to pieces, and dividing the ball, so that one piece went on the inside, and came out between the fifth and sixth ribs near the sternum; the other part passed on the outside, and lodged on the sixth rib. He had been a remarkably stout, healthy man, with a fine constitution, up to the time he was wounded. After the rebels had left, he was taken up by some friends and cared for as best they could, without much, if any, medical assistance for months. He lingered on until July, 1865, nearly two years, when I received a note from Dr. Greenwood, his physician at this time, requesting me to see the case. Accordingly, on the 10th of July, 1865, in the presence of Drs. Greenwood and Harris, I examined the patient, and found him exceedingly emaciated, the wound discharging a very offensive acrid pus at both openings; there was also a very large pleuritic abscess, causing breathing to be very oppressive and laboured. After a careful examination an operation was determined upon. He was placed on a table, and, assisted by the two physicians named, I made an incision from where the ball entered to its exit, about ten inches. I then took out two pieces of rib, which were denuded of periosteum; removed the piece of bullet; opened the abscess, which discharged about three pints of very offensive thick purulent matter; cleansed it out; united the edges with stitches and adhesive straps; placed him back in bed; gave him morphia and brandy, and treated him as in all serious operations. His recovery was very rapid; no dressing was used except cold water. Before the union of the edges became sufficiently strong to bear much strain, he went into the mountains hunting, fell over a fence, and tore the attachments loose for some three inches. Failing to unite again, I pared the edges, brought them together with three stitches, and adhesive straps. This time I put a belt around him, including his arm in it, thus fastening it to his body so that he could not raise it; after this his recovery was complete. He is now (twenty-five months since the operation, and over four years since he was wounded) perfectly well. Last year he raised over six hundred bushels of corn, besides other grain, by his own labour. He can lift the heaviest logs, and do hard labour without inconvenience.

Sub-luxation of the Body of the Sternum. By M. FORSTER, M. D., of Thorndale, Ontario, Canada.

The subject of this case was a young man who was at the raising of a new building, and fell from a beam to the ground, a height of sixteen feet. He fell head-foremost, and struck between his shoulders, his head thrown forwards. I was called on the evening of the accident (Tuesday, June 18), and found, on examination, that the gladiolus had parted from the manubrium. There was depression of over half an inch at the lower part of the latter bone. Pressure over the point of depression caused considerable pain, and slight difficulty of breathing. The patient sustained no other apparent injury. I applied a bandage, to retain the shoulders as far backwards as possible. He was then placed upon a hard bed, with a pillow between his shoulders, and allowed to remain on his back with his head lowered, so as to elevate the clavicles and produce tension of the pectoral muscles. I applied pressure upon the body of the sternum, allowing the patient to take frequent and deep inspirations, thinking I might possibly reduce the parts at once, but did not succeed. However, I entertained the opinion that there was no other plausible way of reduction, on account of the situation of the parts, than to throw the head and shoulders backwards, so as to draw the clavicles upwards, and produce tension of the pectoral muscles, so as to draw them outwards; and that the two forces combined, assisted by inspiration, would draw the mannbrium upwards and outwards, so that the parts would eventually become adjusted. I was not disappointed. On my next visit I found considerable improvement, and at the end of three weeks the patient was able to resume his usual occupation, perfectly cured.

Sequel to Case of Laryngeal Polyp. By J. Solis-Cohen, M. D.

In the April number for the present year of this Journal I related a case of fibroid polyp removed by me from the larynx of a lady of this city.

Some six or eight weeks after treatment had been discontinued, the patient paid me a visit. Her voice continued to improve, and although it was not as powerful as it had originally been, she was completely satisfied with the result, and had called in response to my request to be permitted to examine her larynx from time to time. I found the larynx healthy and normal in appearance; no trace of the previous existence of the tumour could be detected by the mirror; the left vocal cord was still smaller than the right, as it had been at the examinations subsequent to the removal of the neoplasm. This was the last time I examined the lady's larynx in life.

Some weeks after this I was informed by her attending physician, that Mrs. W. was undoubtedly suffering from cancer of the pyloris, which would probably terminate fatally at no very distant period.

A week before her death, which occurred on the 15th of July last, Mrs. W. sent for me. I found her in bed very much emaciated, exceedingly feeble from exhaustion, and speaking in a low whisper. After saying how desirous she had been of seeing me before her death, she exerted herself to speak aloud for a minute or two in order to show that her voice was still good and clear, had her strength enabled her to use it.

On the 17th of July I was requested to perform a post-mortem examination of Mrs. W., which I did, with the assistance of Drs. Turnbull and McMurray. The pyloric orifice of the stomach was found nearly occluded by an immense mass of scirrhus, which extended into the organ for more than three inches. There had been a good deal of inflammation of the peritoneum, which had resulted in extensive adhesions between the various adjacent organs. Percussion over the lung elicited a clear sound.

The larynx and trachea were laid open. They were perfectly healthy, but quite anæmic. At the point of junction of the left wing of the thyroid cartilage with its fellow, and just beneath the internal point of attachment of the left vocal cord, we found a minute projection of tissue tapering to a point, pale as the surrounding structures, and less than a line in length, the base being about a line in width. This was doubtless the point of attachment of the tumour to the rentrant angle of the thyroid cartilage, which gave rise to the peculiarities mentioned in the report of the case. No other trace could be detected of the previous existence of a neoplasm, unless I except a darkened spot, irregularly oval, and about three lines in length on the inferior surface of the anterior portion of each cord, which we supposed to be post-mortem manifestations, although it is possible that they may have been produced by pressure of the cords against the upper surface of the tumour. The glottis and entire laryngeal structures were smaller than I had yet seen them in the adult.

PHILADELPHIA, August 1, 1867.

Puerperal Convulsions successfully treated by Bromide of Potassium. By JARED B. WOOD, M. D., Croton Falls, N. Y.

A few days after reading in the *American Journal of the Medical Sciences* for July, 1867, the report, by Dr. Charles C. Shoyer, of a case of puerperal convulsions successfully treated by the bromide of potassium, I was called to a case of the same disease in consultation with Dr. C. Lee, and suggested the use of that remedy, which proved so efficacious that I am induced to report it.

Mrs. Q., aged 40, multipara, was taken July 14 with severe cephalalgia, which continued unremittingly up to the morning of the 17th, when she was delivered by one pain of a living child. Shortly after, she was taken with convulsions, and Dr. C. Lee being called in, prescribed morphia, and cold to the head. At 8 P. M., when I saw her in consultation, she had had five convulsions; pulse 45. I suggested the use of bromide of potassium in fifteen-grain doses, to be given every two hours. 10 P. M. Had one convulsion about half an hour after the administration of the first dose; slept some afterwards.

July 18, 8 A. M. The attendants had been unable to administer the medicine. Patient had had three convulsions during the night, but since 3 A. M. had slept very quietly. We then aroused her, and succeeded in administering the bromide, to each dose of which one grain of bromide of ammonia was added, and this was given during the day at the same intervals. In the evening she awoke as from a sound sleep, and inquired what had been the matter with her, not even remembering the birth of her child. Pulse about 65.

The same treatment was kept up during the night and next day, with the exception that the medicine was given at longer intervals. The patient had no more convulsions after 3 A. M. of the 18th, and only a little fever followed, which was controlled by ordinary remedies.

I would not hesitate to give the bromide of potassium in still larger doses, and I believe that as soon as the system can be brought thoroughly under its influence not another convulsion will take place.

Local Anæsthesia in Otalgia. By CHARLES C. SHOYER, M. D., of Leavenworth, Kansas. I have found the following means effectual in promptly relieving the pain in earache: I draw into the smallest sized rubber syringe about half a drachm of chloroform, and slightly elevating the nozzle to prevent slipping, introduce it into the ear. The effect is magical, stopping the pain almost immediately.

Prolonged Gestation. By P. M. RIVERS, M. D., of Waterboro, S. C.

The following case recently occurring in my practice, in which the commencement of gestation was so well marked, and the duration of pregnancy so much extended beyond the utmost limit allowed for human gestation, that I have thought it proper to report it. I was engaged to attend Mrs. A., who expected to be confined about the 15th of October. Her friends stated that she had suffered much with constant pain, but did not think the labour sufficiently advanced to send for me. These pains wore off after three or four days, but she continued to suffer more or less pain in the abdomen until about the middle of November. At that time her husband requested me to visit her, as she was again suffering much pain, which kept her awake all night. I should state that this lady is intelligent and well educated; aged about thirty-five; the mother of three children. I had attended her in her previous confinements, and always found her particular and accurate in her calculations. She informed me that she weaned her little girl, a child two years old, about the 1st of December, 1865. Early in Jan. '66, she menstruated for the first time since the birth of her last child; the discharge was in the usual quantity, and lasted six days. On the 15th of January she was well; but from that day she had not the slightest return of the discharge; that on the 15th and 16th of May she quickened. She had continued in good health until the 15th of October; that about that time she suffered, as I have stated, with severe pain in the abdomen, preventing sleep, and compelling her to walk about her room all night. These pains continued three days and nights, and then abated; but she had never been perfectly easy and comfortable since. For the last five nights she had again suffered greatly, the pains going and coming; and, to use her own expression, the abdomen, during the pain, becoming as hard as a board. I directed warm applications to the abdomen, a dose of Dover's powder, and on the following morning a small dose of oil, and comforted her with the assurance that she would be confined in a very few days. This simple treatment measurably relieved her. December passed without any return of the severe pain. On the 12th of January her husband asked my opinion of her case —when I expressed my fear that she was labouring under the great misfortune of extra-uterine pregnancy. This opinion, of course, greatly distressed him; but the very next night, about eight o'clock, he came with joyful countenance to inform me that his wife was in labour. I immediately attended her, and, upon examination, found the head presenting and well engaged in the inferior strait, and the labour apparently progressing favourably. The labour from this time advanced very slowly, but the vertex did appear to approach nearer the vulva. This, I afterwards discovered, was only from elongation of the head. After waiting until three o'clock, and finding the child but little advanced—the lady was then suffering extremely, crying continually for help—I determined to deliver with the forceps. Upon introducing my hand to apply them, the head felt elastic, and I could feel the parietal bones floating loosely in this sack of water. With some trouble I locked the forceps, but upon applying traction, they slipped over the head. When I applied my hand again, I could almost lay hold of the scalp. The fœtus was evidently hydrocephalic, and upon puncturing the head, an enormous quantity of water escaped.

Ossification of the Placenta. By C. B. GALLOWAY, M. D., Canton, Miss.

During a professional experience of twenty years I have met with eight cases of ossified placenta. My having met with more cases of the kind than my professional brethren I ascribe to my making it a rule in all cases to inspect the placenta, which I think most physicians neglect to do.

In every case which has occurred under my observation the child was well developed and the mother convalesced as rapidly as ordinarily. Nevertheless, in *complete* ossification, the natural functions of the placenta in furnishing nutriment to the embryo must be suspended. It would be, however, difficult to imagine the occurrence of complete ossification without presupposing the loss of all vitality in the fœtus, and its consequent premature expulsion.

It is worthy of inquiry whether this morbid process may not be the active cause of many instances of abortion and of stillbirth, and I shall have fully accomplished my object if I should succeed in directing the attention of the profession to a more careful study of this subject.

DOMESTIC SUMMARY.

Death from Chloroform on its Third Administration.—Dr. H. A. Dubois, Assistant Surgeon U. S. A., reports (*New York Med. Journ.*, Aug. 1867) a case of this, which is remarkable for the rapidity of death which occurred in from five to seven minutes after commencing to inhale the chloroform. The subject of the case was a man 35 years of age, with scrofulous disease of one testicle. Dr. D. removed a greater portion of the organ by Syme's operation. The wound healed kindly, and he was discharged cured in less than a month. "Chloroform was used in the above operation. It required some two ounces to bring him under its full influence; he struggled violently, requiring several assistants to hold him, and he had a number of severe tonic spasms. January 31st, he again presented himself. The other testicle, on examination, was found to have taken on the same disease. "He continued under treatment until February 6th, when Dr. D. placed the patient under the influence of chloroform for the second time, and on laying open the scrotum, found the testicle so much diseased as to necessitate the removal of the entire organ. The cord was also much disorganized, and he included the greater portion of it in two ligatures. The patient came under the influence of chloroform with little difficulty, though with more than is ordinarily observed, and only about ℥ss of chloroform was used. The wound healed to a great extent, though one ligature remained firmly held after two weeks.

"February 23d, finding the remaining ligature still firmly held, and efforts to remove it causing considerable pain, I sent for chloroform, and putting about one drachm on a small towel, loosely folded in the form of a cone, and with the apex well opened, I proceeded to put him under its influence. He stated, in answer to a question before losing consciousness, that he was coming under its influence easily, and that he hoped he would not cause as much trouble as he had done before. He breathed well and appeared to be rapidly becoming affected. The second stage coming on, he threw his arms about so that it required an assistant to hold him, though not to the same extent that one frequently sees; the breathing suddenly becoming stertorous, the chloroform which had been renewed once to the extent of one fluidrachm was discontinued. The patient was lying on his bed and I was watching the face attentively, to notice the moment when the eyelids should show by their relaxed condition that the patient was sufficiently under the influence of the anæsthetic to perform the trifling operation required. The stertorous breathing was followed by a spasm, causing the body to assume the condition of opisthotonos and to slide down in the bed; the face at the same time assumed a peculiar expression, which, though it is impossible to describe, at once alarmed and caused me to throw water on the face and abdomen. The limbs now became perfectly relaxed, the spasm having ceased." The convulsion lasted about half a minute. Dr. D. noticed that the breathing was gasping, and at once seized the tongue and drew it forcibly out of the mouth, and commenced artificial respiration; sent a patient for ammonia, another for a magneto-electric machine, which was in an adjoining room, and a third for hot water. These several means were all immediately resorted to without benefit.

A few gasping respirations took place at some length of time from each other, but death had taken place.

Dr. D. examined the chloroform used and found it pure.

On post-mortem made four hours after death Dr. D. found "only a slight accumulation of fat over the pericardium and on the surface of the heart. The pericardial fluid measured about one ounce, the left ventricle was firmly contracted and almost entirely empty, only a slight clot being observed. The right flaccid, containing a moderate quantity of blood, and the auricle largely distended. The aorta slightly larger than usual. The lungs contained a few hardened tubercles near their apices, and at the apex of the left a well-marked cicatrix was observed. The heart's structure was firm. The kidneys were congested and measured seven inches in length by about four in width, and resembled much the larger red kidney described by Bright. The spleen, greatly enlarged, measured nine inches in length by five in breadth. The liver increased slightly in size and of normal consistence, while the lymphatics were also slightly enlarged. The spermatic cord was diseased for about two inches, and the ligature nearly ulcerated through. On removing the skull cap there was observed to be a considerable quantity of fluid effused between the dura and pia mater, and also between the latter and the arachnoid. The former quantity I should *estimate* at six drachms to one ounce, while the cerebro-spinal fluid amounted, I should judge, to some four ounces.

Death from Swallowing Two Ounces of Chloroform.—The following case, recorded by Dr. D. W. Stormont, of Topeka, Kansas (*Leavenworth Medical Herald*, July, 1867), is particularly interesting from the short time which intervened between taking the chloroform and death:—

A healthy man, twenty-six years of age, for the purpose of self-destruction, at ten o'clock swallowed, in the presence of his obdurate sweetheart and a female friend, two ounces of undiluted chloroform. He then composedly laid down on a bed, as he said, to die. "In three minutes (estimated time) he could with difficulty be aroused from the stupor into which he was rapidly sinking; could not speak, but indicated that he had severe pain in the stomach. In five minutes he was entirely unconscious, lying still, breathing stertorously. He died in just one hour after taking the draught. Medical assistance, from some cause, did not arrive until a few minutes before he died, and nothing was done to counteract the effects of the poison."

Post-mortem.—"The surface was livid; the face, neck, chest, and nails very much so. Bloody froth was issuing from the mouth and nostrils. On opening the chest, both lungs were found to be dark externally, and fully distended. They were uniformly congested with dark, liquid blood, and the posterior portions were perfectly engorged with it. Both sides of the heart were nearly full of black, uncoagulated blood. The liver and spleen both normal externally, but somewhat softened, and filled with dark, liquid blood. The œsophagus was congested. The stomach, at the cardiac end, and along the greater curvature, and half-way up each side, was discoloured externally, dotted over with ecchymosed-looking patches, giving it a mottled appearance. It contained two or three ounces of a light-coloured liquid, which had a slight odour of chloroform. At the cardiac end, internally, and along the bottom nearly to the pyloric end, the mucous membrane was of a dark-red colour, softened, and easily peeled off with the thumb-nail. Up the sides it was of a brighter red, speckled appearance, and not softened. The intestines were healthy. Circumstances prevented us from extending the examination, which is to be regretted."

Deep Tumours of the Neck; Excision; Ligature of Internal Jugular Vein.—The following case, operated on by Prof. Greene, of the Medical School of Maine, is reported in the *Boston Med. and Surg. Journal*, May 9, 1867: A woman, æt. 42, had two years previously noticed a little lump just above and to the outside of the right sterno-clavicular articulation. It was now an irregularly shaped, hard mass, about the size of a hen's egg, partially covered in by the sterno-mastoid muscle. It was not tender, and but slightly painful. It pressed with sufficient force upon the trachea to produce a severe cough and difficult breathing, and it was for this reason that she desired its removal. The skin was freely movable over it, as was the muscle, but its feel gave evidence of deep-seated attachments.

Ether was administered, and the tumour exposed by a straight incision along the inner border of the sterno-mastoid. The tumour was adherent to the trachea and œsophagus, and firmly blended with the common sheath of the carotid and jugular, the latter vessel itself being so involved that in attempting to separate it the walls gave way, and a profuse gush of venous blood occurred. This was immediately controlled by pressure until a ligature could be applied, when the dissection was completed and the growth removed. For some days the patient suffered from headache and local inflammation, but eventually made a good recovery, the ligature coming away on the thirteenth day.

Extirpation of the Uterus by Mistake for Ovarian Tumour.—Dr. E. Krakowizer, presented to the New York Pathological Society the body of a uterus, in the walls of which was imbedded a large fibroma, taken from a woman forty-eight years of age. She was always in most excellent health, and menstruated regularly up to the time of the operation. About two years ago she felt that her health was becoming somewhat impaired. One year ago a swelling in the lower part of the abdomen appeared; it did not increase, however, to any considerable degree, or with any marked rapidity, and its presence only occasioned her uneasiness.

" Dr. K. saw her for the first time about six weeks ago. The tumour, which was about the size of a child's head two years old, was felt occupying the lower part of the abdomen. It was smooth, elastic, painless on pressure, and movable from side to side. On making a vaginal examination, it was found that the mass bore down behind the symphysis pubis, and had crowded the uterus backward. The os was felt on the posterior part of the tumour. A uterine sound entered with great facility to the depth of two inches and a half behind the tumour. When the sound was grasped by one hand and the tumour held with the other, it seemed to move independently; I therefore concluded that I had a simple ovarian tumour to deal with, and that the uterus was normal and unconnected with it. I supposed that the pedicle was a pretty short one. No examination per rectum was made.

The condition of things was explained to the woman, and she most decidedly preferred to have a radical operation undertaken. Dr. K. then called in Dr. Kammerer, who made an examination, and corroborated the former opinion in every respect, except that he thought that the tumour originated from the left side, while Dr. K. was of the opinion that it came from the right side.

After chloroform was administered, an incision was made midway between the umbilicus and symphysis pubis to the extent of four inches, and the tumour was presented. At the previous examinations, never having felt any fluctuation, Dr. K. was of the opinion that the walls of the cyst were very thick. When the peritoneal cavity was opened sufficiently wide so as to introduce the hand, it was found that the omentum was adherent in several spots on the surface of the tumour. On the left side a band was detected, with a somewhat cylindrical yielding mass in it, which seemed to be the dilated Fallopian tube of the left side. On bringing the hand between the promontory and the tumour, the mass was found to be connected most intimately with the cervix uteri. Before that was done, however, a trocar was plunged into the mass, and on introducing the trocar, Dr. K. became aware that he had to deal with a solid tumour, as no fluid escaped and the end of the trocar was firmly held fast. A great deal of venous oozing took place from this spot. Between the promontory of the sacrum and posterior aspect of the tumour Dr. K. could feel plainly the left ovary, and he could also ascertain that the mass was a continuation of the cervix uteri. The uterine sound was passed to the depth of two inches and a half; it was also evident that the tumour was springing from the lower portion of the body of the uterus, which a little above the inner os was swelling out rapidly into a globular tumour.

The question then arose whether it was better to desist from the operation or go on. The latter was decided on. Dr. K. ligated both Fallopian tubes, and of course part of the broad ligament, and after the ligation of these bands, and when the tumour became more movable, he lifted it out of the abdominal cavity, pulling it well up above the symphysis pubis, so that the neck of the tumour could be seen and felt. He then carried the chain of the écraseur around it, and proceeded very slowly to close it. He was fully three-quarters of an hour in accomplishing this, in the fear that by proceeding more rapidly hemorrhage might ensue. After the chain had worked through the rest of the womb, that is, the cervix being still upon the stretch above the symphysis, no hemorrhage was visible, but as soon as the stump was fairly liberated the whole field of the operation was deluged with blood. The stump was again grasped with the forceps, and both uterine arteries were secured, but the uterine veins, as well as several sinuses in the cervix itself, continued to pour forth blood, and these with great difficulty were at length secured. For greater security against accident, a silver wire was then twisted around the end of the stump, and the ends brought out of the wound.

The loss of blood was considerable, but the pulse did not indicate an anæmic condition of the body.

The operation took fully two hours and a half. The wound was closed with five silver-wire sutures. A hypodermic injection of Magendie's solution was then administered, which caused an hour's sleep. Four drops of Magendie's solution were given every hour during the night. After midnight she became restless and vomited several times. It was then very evident that peritonitis was extending rapidly. A second hypodermic injection was made, and large doses of Magendie were given. At four o'clock she died.

No post-mortem examination was made.

The specimen has been incised by a longitudinal cut, and it will be seen that a large fibroma is imbedded in the walls of the uterus, and that this mass has nothing to do with the cavity itself."—*Medical Record*, Sept. 1, 1867.

Propolis as a Remedy for Acute and Chronic Diarrhœa.—Dr. H. O. Hitchcock, of Kalamazoo, Mich., extols (*Chicago Medical Journal*, Sept. 1867) the efficacy, in diarrhœa, of propolis, a reddish-brown, odoriferous, glutinous substance obtained from the buds of the poplar, birch, and various other resinous trees. He has found it the best remedy he has ever used in mucous diarrhœa, in chronic camp diarrhœa, and in the diarrhœa of children; but it has failed in chronic malarial dysentery. It appears, he states, to possess an anodyne property, but does not constipate. He uses an alkaline solution made by dissolving two ounces of propolis in one drachm of liquor potassi, and then adding water and simple syrup, of each two ounces. The dose is half a teaspoonful after each stool.

Disease of the Supra-renal Capsules without Discoloration of the Skin.—Dr. J. B. S. Jackson reported to the Boston Society for Medical Improvement, July 22, a case in which, on post-mortem, the left renal capsule was found enlarged, and the right from two to three times its usual size. To the feel they were quite firm; and, on incision, were found to contain a large amount of opaque, tubercular-looking matter, though some portions were healthy. There was never the slightest discoloration of the skin.—*Boston Med. and Surg. Journ.*, Sept. 12, 1867.

MISCELLANEOUS NOTICES.

An Algoid Vegetation the Cause of Syphilis.—We have received from Dr. J. H. Salisbury a paper containing the description of a peculiar algoid vegetation which he has discovered in chancres, which he names "*Cryptos syphilitica*," and which he conceives to be the cause of syphilis. This algoid growth finds a fertile soil, he states, in the connective tissue only, and a different species which he has discovered and considers to be the cause of gonorrhœa develops only in epithelial cells, which, he says, explains why the former "becomes readily constitutional, while the other is only a surface disease."

Sale of Diplomas.—Sir DOMINIC CORRIGAN, we regret extremely to find, has allowed himself to be grossly imposed upon by an advertising vendor of diplomas, and upon such disreputable authority, he has hastily charged, in his address on medicine before the British Medical Association, an American and some German schools with selling their diplomas without an examination of the candidates. Among other schools, he makes this charge against "the University of the State of Pennsylvania." Of the existence of any school with this precise title, we have no knowledge; but it may be inferred that the institution alluded to, is "the University of Pennsylvania," the medical department of which has for a century enjoyed so high a reputation. Should this inference be correct, we unhesitatingly pronounce the charge to be utterly unfounded; indeed, the conditions under which diplomas are conferred by this University render their issue "*in absentia*" impossible.

The medical faculty have no authority to issue diplomas; they merely examine candidates who have been in attendance on their courses of lectures, and recommend for graduation such as they deem to be qualified. This recommendation is transmitted to the Provost, and by him sent to the Board of Trustees, composed of gentlemen of the highest honour and integrity. This Board, if they think proper, issue their "mandamus." The diplomas are then filled up with the names of the graduates, and they are signed by each member of the medical faculty, and by the Provost, Vice-Provost, and the Secretary of the Board of Trustees, and the seal of the University is attached by the last-named officer. This seal is kept by him, is never attached to any document except by himself, and this only by order of the Board. All this is a matter of record. Further, a list of the graduates is printed and distributed at every commencement; and if the name of any one were inserted who had not attended the course of lectures during the preceding session, the fact could not escape detection. Even an *ad eundem* degree is not conferred without an examination.

We should not have thought this explanation necessary, had not the charge been made on so public and important an occasion and by one holding the high position of Sir Dominic Corrigan.

Since the above was in type late English journals have come to hand, in which we find an unqualified and indignant denial by Dr. F. Wilbrand, Dean of the Medical Faculty of the University of Giessen, of the charge made against that school, and an appeal to Sir Dominic Corrigan, as a gentleman, to now revoke his unfounded imputation.

Note from Dr. Githens.—To the Editor of the *American Journal of the Medical Sciences*—Dear Sir: As Dr. Schofield thinks it might possibly be inferred, in the case of Julia Dillon, delivered by him (see No. 7 in my article on Meningitis in the July number of the *American Journal of the Medical Sciences*), that there was a laceration of the perineum, I will say that no such laceration was stated to have existed, and that I consider the cause of the sloughing to have been the pressure of the fœtus in a system whose vital powers were much depressed by an active blood-poison.

Philadelphia, Sept. 1867. Most truly yours, W. H. H. GITHENS.

INDEX.

A.

Abscesses, Lister's method of treating, 541
Abscess in appendix vermiformis, 285
Accommodation, theory of, 554
Acupressure, progress of, 234
Adams on Club-Foot, review of, 482
Addison's Disease, notice of Greenhow on, 524
Aitken, growth of young soldier, notice of, 239
———, the Science and Practice of Medicine, notice of, 239
Algoid vegetation, cause of syphilis, 571
Allen, changes in a specimen of flat foot, 412
———, intra-capsular fracture, 138
Anæsthetics, action of, on blood, 529
Anæsthetic, chloroform and ether in mixture as, 248
————, tetrachloride of carbon as, 533
————, protoxide of nitrogen as, 248
Anencephalic monster, 281
Animal temperature, researches on, 249
Anstie on Epidemics, notice of, 523
Anteflexion of uterus, dysmenorrhœa from, 98
Apoplexy, notice of Mushet on, 521
Appendix vermiformis, abscess in, 285
——————, concretion in, 416
——————, perforation of, 145
Arnauld, hypodermic injections of quinia in fevers of Algeria, 537
Artificial anus from gunshot wound, 105
Ashhurst, symptoms from sudden arrest of circulation in main artery of limb, 147
Astigmatism, 82
Atlee, gunshot wound of knee-joint, 127
Atropia and mercury, relative value of in iritis, 265
———, immunity of rabbits to action of, 249
Axillary aneurism, ligature of subclavian, 70

B.

Barton, malformation of genital organs, 282
Beale on the Microscope, notice of, 229
Bell, manipulation for reduction of dislocations of hip-joint, 547
Beranger-Feraud, shampooing in sprains, 259
Béraud's Surgical Anatomy, notice of, 519
Bernatzik, constituents of cubebs, 533
Bernutz and Goupil's Clinical Memoirs on Diseases of Women, review of, 166
Bibliographical Notices—
——— Acupressure, 234
——— Aitken, Growth of the Recruit and Young Soldier, 239
——— Aitken, Science and Practice of Medicine, 239
——— American Hospitals for the Insane, Reports, 202, 500
——— Anstie on Epidemics, 523
——— Beale on Microscope, 229
——— Beraud's Surgical and Topographical Anatomy, 519
——— Bigelow's Modern Inquiries, 504
——— ——— Ununited Fractures, 507
——— Brande and Taylor's Chemistry, 526
——— Catalogue of Obstetrical Instruments, 239
——— Catlow, Principles of Æsthetic Medicine, 525
——— Chapman on Diarrhœa and Cholera, 525
——— Dalton, Treatise on Human Physiology, 505
——— Davies, Preparation and Mounting Microscopic Objects, 508
——— Greenhow on Addison's Disease, 524
——— Hartshorne, Essentials of Practical Medicine, 506
——— Hodges, Practical Dissection, 214
——— Jardao, Cerebral Congestion and Hemorrhage, 521
——— Jones on Spurious Vaccination, 216
——— Kocher on Veratrum in Pneumonia, 236
——— Lidell, Osteo-Myelitis, 213
——— Medico-Chirurgical Transactions, 217
——— Meigs' Obstetrics, 212
——— Mushet on Apoplexy, 521
——— New Hampshire Medical Society's Transactions, 209
——— Nichols, Chemistry of the Farm and Sea, 512
——— Obstetrical Society of London, Transactions of, 221
——— on Ununited Fractures, 507
——— Packard on Fractures of the Upper Extremity, 215
——— Peacock, on Malformations of Human Heart, 515
——— Richardson's Element's of Human Anatomy, 526
——— Roberts, Eulogium on J. M. Smith, 512

Bibliographical Notices—
——— Smith on Fractures of Lower Extremity, 214
——— Transactions of State Medical Societies, 493
——— Troltsch, Aural Medicine, 238
——— Ullersperger, Curability of Phthisis, 237
——— Velpeau, Surgical Clinic of La Charité, 513
——— Warren's Surgical Observations, 201
——— Wormley, Micro-Chemistry of Poisons, 511
Bigelow's Modern Inquiries, notice of, 504
——— on Ununited Fractures, notice of, 507
Bladder, rupture of, 418
Blake, spondylisthesis causing difficult labour, 285
Blood, action of anæsthetics on, 529
Bochdalek, new lingual muscle, 242
Boisnot, dislocation of both hips, 396
Bowel, internal strangulation of by band, 263
Brain, influence of antecedent disorders on affections of, 54
Brande and Taylor's Chemistry, notice of, 526
Brinton, luxation of body of sternum, 39
Bromide of potassium in affections of the testis, 95
——— ——— in puerperal convulsions, 276, 566
Bronzed skin, healthy supra-renal capsules, 413
Brown, bromide of potassium in affections of testis, 95
Bryant, internal strangulation of bowel by band, 263
Buckler, solvents for cholesterine, 51
Burdon-Sanderson, mode and duration of contraction of the heart, 246
Burge, abscess of appendix vermiformis, 285
Butler Hospital for Insane, notice of report, 500
Buttura, seton to neck in diabetes, 539

C.

Cameron, manipulation for reducing fractures of hip, 548
Cancer of stomach, liver, spleen, and mesenteric glands, 141
——— of subserous tissues of peritoneum and pleura, 413
Carnochan, ligature of both common carotids for elephantiasis, 109
Caspary, spontaneous fracture, 262
Cataract, new method of extracting, 270
———, senile, operation for before maturity, 271
Catlow, Principles of Æsthetic Medicine, notice of, 525
Cephalic version, 398
Cephalotripsy, 272
Cerebro-spinal meningitis, epidemic of, 17
Cervical tumour removed with exsection of internal jugular vein, 284
Cervix uteri, hypertrophy of, 403
Chambers on Indigestions, review of, 184
Chapman on Diarrhœa and Cholera, notice of, 525
Chemistry of the Farm and Sea, notice of Nichols on, 512
Chest, gunshot wounds in, 564
Children, pleurisy in, 539
Chlorinated mixtures, in cholera, 248, 257
Chloroform and ether in mixture as an anæsthetic 248
———, causes of death from, 322
———, death from, 568, 569
Cholera, chlorinated mixtures in, 248, 257
———, temperature in, 539
Cholesterine, solvents for, 51
Chorea, relations of, to insanity, 535
Choroid coat of eye, tubercular nodules in, 553
Chronic gastric ulcer, 252
Circulation, sudden arrest of in main artery of limb, 147
Citric acid in metritis, 277
Clarke, ear douche, 284
Club-foot, review of Adams on, 482
Cobra-di-capella, effects of poison of, 561
Collas on glucosuria, 273
College of Physicians of Philadelphia, Transactions of, 129
Colloid substances, physiological relations of, 528
Compound fractures, Lister's method of treating, 541
Cornheim, tubercular nodules in choroid coat of eye, 553
Corrigan, sale of diplomas, 572
Courty, cure of ovarian cysts without operation, 561
Crystalline lens, reproduction of, 554
Cubebs, value of constituents of, 533
Cutaneous absorption, 245
Cyon, innervation of heart, 246
Cystic disease of testis, 135
——— of kidney, 136

D.

Dalton, Treatise on Human Physiology, notice of, 505
Davies, Preparation of Microscopic Objects, notice of, 508
Dawson, formation of tubercle, 254
De Meric, some complications of gonorrhœa, 258
Diabetes, seton to neck in, 539
Diarrhœa, propolis as a remedy in, 571
Dislocation of both hips, 396
——— of hip-joints, manipulation for reducing, 396, 547
Diplomas, sale of, 572
Disinfection, review of works on, 149
Dobie, chlorinated mixture in cholera, 248, 257
Dubois, death from chloroform, 568
Dysmenorrhœa depending on anteflexion of uterus, operation for, 98

E.

Ear douche, 284
Eastern Lunatic Asylum of Kentucky, notice of report of, 206
——— ——— of Virginia, notice of report of, 204
Elbow-joint, anterior dislocation of, 285
Electro-magnetism, recovery of still-born child by, 563
Elephantiasis Græcorum, ligature of both common carotids for, 109

Ellis on chloroform and ether in mixture, 248
Emasculation, 278
Embolia of one branch of central artery of retina, 552
Emmet, vesico-vaginal fistula, 313
Encephaloid cancer, bronzed skin, 413
Epilepsy, strychnia in, 538
Epiphysary disjunctions, 543
Epithelioma of stomach, 138
Eye, inflammation of after smallpox, 267
——, sympathetic inflammation of one eye seven years after injury of the other, 268
Eyeball, excision of in acute stage of traumatic inflammation, 269
———, recovery after extensive wound of, 555

F.

Fatty embolism, 536
Femoral artery, ligature of, 392
Fever, alteration of muscles in, 250
——, treatment of remittent and yellow, 390
Fibro-malignant tumour, excision of, 279
Fick and Wislicenus, source of muscular energy, 527
Flat-foot, structural changes in specimen of, 412
Forbes on rupture of bladder, 419
Forster, subluxation of body of sternum, 564
Foucher, dressing for wounds, 265
Fox, effects of flannel and scratching on skin, 256
Fracture, intra-capsular of, femur, 138
———, extensive, of pelvis, 261
———, spontaneous, 262
——— of neck of femur, 377
Frankland, source of muscular energy, 527
Freeman, vesico-vaginal fistula, 280
Functional nervous disorder, 534

G.

Galloway, ossification of placenta, 567
Gastric ulcer, chronic, 252
Genital organs, malformation of, 282
Gestation prolonged, 272, 566
Githens, epidemic cerebro-spinal meningitis, 17
——, note from, 572
Glucosuria, pathology and treatment of, 273
Gonorrhœa, some complications of, 258
Gordon, placenta prævia, child delivered through placenta, 560
Green, astigmatism, 82
Greene, ligature of internal jugular vein, 569
——, removal of cervical tumour, with exsection of internal jugular vein, 284
Greenhow on Addison's Disease, notice of, 524
Growth, statistics of human, 67
Gums, fatal hemorrhage from after scarification, 551
Gunshot wound, artificial anus from, 105
Guterbock, temperature in cholera, 539
Guy, microscopic toxicology, 562

H.

Hair, organic changes of structure of, in syphilis, 537
Halford, poison of cobra-di-capella, 561
Hartshorne, Essentials of Practical Medicine, notice of, 506
Hayem, alterations of muscles in fevers, 250
Head, injuries of, 261
——, injury of, without aphasia, 550
Heart, influence of antecedent disorders on affections of, 54
——, innervation of, 246
——, malformations of human, 513
——, milk diet in diseases of, 257
——, mode and duration of contraction of, 246
——, rupture of, 421
Heat, relation of to mental work, 282
Hemorrhage from gums after scarification, 551
Herard and Cornil, morbid anatomy of tubercle, 536
Hermann, action of anæsthetics on blood, 529
———, protagon in blood, 527
———, protoxide of nitrogen as an anæsthetic, 248
Herpes zoster frontalis, 556
Hip-joints, dislocation of both, 396
Hitchcock, propolis as a remedy for diarrhœa, 571
Hodges, Practical Dissections, notice of, 214
Hoffman, cutaneous absorption, 245
Holden, influence of antecedent disorders on organic affections of heart and brain, 54
Hospital Reports, review of, St. George's, 187
——— ——— Insane, American, 202
Humerus, removal of at joint, 70
Hunt, anterior dislocation of elbow-joint, 285
Hutchinson, excision of eyeball in acute traumatic ophthalmia, 269
————, fibrous tumour of uterus, 411
————, inflammation of eye after smallpox, 267
————, operation for senile cataracts, 271
————, paralysis of ocular branches of cervical sympathetic nerve, 554
————, herpes zoster frontalis, 556
Hypodermic injections of quinia in fevers of Algeria, 537
———— Method of Injection, report on, 530

I.

Illinois State Hospital for Insane, notice of report, 208
Indigestions, review of Chambers on, 184
Indiana, Transactions of State Medical Society, notice of, 497
Ingham, ruptured bladder, 418
Insanity, relations of chorea to, 535
Intra-ocular pressure, 554
—— uterine polypi, removal of, 560
Iritis, relative value of atropia and mercury in, 265
Itch, styrax liquidus in, 258

J.

Jackson, diseased supra-renal capsules without discoloration of skin, 571
Joints, opening of, for traumatic suppuration, 260
Jones, functional nervous disorders, 534
—— on Spurious Vaccination, notice of, 216

Jordao on Cerebral Congestion and Hemorrhage, notice of, 521
Joynt, protracted gestation, 272
Jugular vein, ligature of, 569

K.

Kidd, cephalotripsy, 272
Kidney, cystic disease of, 136
Kinloch, operation for artificial anus from gunshot wound, 105
Knee-joint, gunshot wound of, 127
Kocher, thermometric observations in pneumonia, 539
——— on Anaplastic Pneumonia, notice of, 236
——— on veratrum in pneumonia, 236
Krakowizer, extirpation of uterus by mistake for ovarian tumour, 570

L.

Labour complicated with ovarian tumour, treatment of, 271
——— difficult from spondylisthesis, 285
Laroyenne, sub-periosteal resections, 548
Laryngeal polyp, sequel to case of, 565
Lawson, sympathetic inflammation of eye seven years after injury of its fellow, 268
Lea, glucosuria and albuminuria, 273
Legroux, action of digitalis, 248
Lidell, Osteo-Myelitis, notice of, 213
Liebereich, anatomy of capsule of Tenon, 241
———, chemistry of nerves, 527
Ligature of subclavian, 70
——— of both common carotids, 109
Lingual muscle, new, 242
Lister, new method of treating compound fractures and abscesses, 541
Loins, wound of by shell, 275
Lombard, relations of heat to mental work, 282
Longview Asylum for Insane, notice of report of, 503
Louisiana Insane Asylum, notice of report of, 209

M.

Malformation, 409
——— of genital organs, 282
Malformations of human heart, notice of Peacock on, 515
Markoe, median lithotomy, 285
Manipulation for reducing fractures of hip, 396, 547, 548
——— for reducing fractures of hip complicated with fractures of pelvis, 547
Martini, section of nerves for neuralgia, 549
McDonnell, sugar of muscle, 528
McLean Hospital for Insane, notice of report, 501
Measles, two attacks of within six weeks, 284
Median lithotomy, 285
Medicines, physical and physiological action of, 531
Medico-Chirurgical Transactions, notice of, 217
Meigs' Obstetrics, notice of, 212
Meissner, fatty embolism, 536
Meteorology and epidemics, report on, 130
Metritis, citric acid in, 277
Microscope, notice of Beale on, 229
Microscopic objects, notice of Davies on Preparation and Mounting of, 508
——— toxicology, 562
Milk diet in diseases of heart, 257
Miller, treatment of remittent and yellow fever, 390
Milliot, reproduction of crystalline lens, 554
Minot, two attacks of measles within six weeks, 284
Mitchell, encephaloid cancer, 413
Moon, ligature of femoral artery, 392
Moore, anencephalic monster, 281
Morton, axillary aneurism, 70
Mount Hope Institution for Insane, notice of report, 502
Murray, physical and physiological action of medicines, 531
Muscles, alterations of, in fevers, smallpox, etc., 250
Muscle, sugar of, 528
Muscular energy, forms of, 537
Mushet on Apoplexy, notice of, 521

N.

Nebinger, abortion, thigh nearly amputated from stricture of cord, 129
Nerves, chemistry of, 527
———, section of, for neuralgia, 549
Neuralgia, section of nerves for, 549
New Hampshire Medical Society's Transactions, notice of, 209
New Jersey State Asylum, notice of report, 502
New York Asylum for Insane Convicts, notice of report, 502
———, Transactions of the State Medical Society of, notice of, 493
Nichols, Chemistry of the Farm and Sea, notice of, 512
Nightmare in children, 251
Nitrogen, elimination of by kidneys and intestines, 242
Norris, rigor mortis, 529
Northern Ohio Lunatic Asylum, notice of report, 207
Nott, dysmenorrhœa from anteflexion of uterus, operation for, 98
———, hypertrophy of cervix uteri, 403
Noyes, excretion of urea, 345
Nunneley, tetrachloride of carbon as an anæsthetic, 533

O.

Obstetrical Society of London, notice of Transactions of, 221
——— instruments, catalogue of, 239
Ogle, immunity of rabbits to action of atropia, 249
Oleson, citric acid in metritis, 277
Oliver, removal of fibro-plastic tumour from vocal cord, 115
Otalgia, local anæsthesia in, 566
Ovarian cysts, cure of without operation, 561

P.

Packard, cystic disease of testicle, 135
———, epithelioma of stomach, 138
———, fractures of neck of femur, 377
———, Notes on Fractures, notice of, 215

Packard, recovery of still-born child, 563
———, tubercular disease of testis, 135
Paraffo-stearine for bandages and splints, 264
Paralysis of ocular branches of cervical sympathetic, 554
Parent gland cells, 359
Parker, ligature of subclavian artery, 285
Parkes, elimination of nitrogen by kidneys and intestines, 242
Parson's extirpation of thumb nail, 281
Paterson, spectral illusions of the senses, 535
Pathological Society of Philadelphia, proceedings of, 135, 411
Peacock, malformations of human heart, notice of, 515
Pécholier, milk diet in diseases of the heart, 257
Pelvis, extensive fracture of, 261
Pennsylvania Hospital for Insane, notice of report, 202
Pepper, concretion in appendix vermiformis, 416
———, perforation of appendix vermiformis, 145
———, spina bifida, 137
———, supernumerary rib, 148
———, tuberculosis of lungs, &c., 143
Peter, on animal temperature, 249
Philadelphia, meteorology in 1866, 130
Piedanna, injury of head without aphasia, 550
Pirrie and Keith on Acupressure, notice of, 234
Placenta, ossification of, 567
——— prævia, child delivered through placenta, 560
Playfair, treatment of labour complicated with ovarian tumour, 271
Pleurisy in children, 539
Pneumonia, thermometric observations in, 539
Poisons, notice of Wormley on Micro-Chemistry of, 511
Pooley, congenital malformation, 409
Propolis as a remedy in diarrhœa, 571
Protagon in nerves and blood, 527
Protoxide of nitrogen as an anæsthetic, 248
Puerperal convulsions, bromide of potassium in, 276, 566
Pulmonary phthisis, curability of, 237
Pyæmia from gunshot wound, 274

Q.

Quinlan, extensive fracture of pelvis without lesion of viscera, 261
Quintuple birth, 559

R.

Rabbits, immunity of to action of atropia, 249
Radcliffe, pyemia? from gunshot wound, 274
Rankin, self-emasculation, 278
Ransome, colloid substances, 528
Reagan, gunshot wounds in chest, 564
Reeve, causes of death from chloroform, 322
Resections, Sedillot on, 548
———, sub-periosteal, 548
Reviews—
——— Adams on Club-Foot, 482
Reviews—
——— Bernutz and Goupil, Clinical Memoirs on Diseases of Women, 166
——— Chambers on the Indigestions, 184
——— Disinfection, 149
——— Military Surgery, 423
——— St. George's Hospital Reports, 187
Rheumatism, varieties of, 359
Rhoads, cancer of stomach, liver, spleen, and mesenteric glands, 141
Rib, supernumerary, 148
Richardson's Anatomy, notice of, 526
Rigor mortis, nature of, 529
Ringer, nightmare in children, 251
Rivers, prolonged gestation, 566
Roser, opening of joints for traumatic suppuration, 260
———, injuries of head, 261
Ruschenberger, statistics of human growth, 67

S.

Salisbury, an algoid vegetation the cause of syphilis, 571
——— parent gland cells, and varieties of rheumatism, 359
Samisch, embolia of one branch of central artery of retina, 552
Scalp, wounds of, 426
Schultze, styrax liquidus in itch, 258
Sedillot, resections, 548
Shaffner, fibro-malignant tumour of neck, 279
Shampooing in sprains, 259
Shoyer, local anæsthesia in otalgia, 566
——— puerperal convulsions treated by bromide of potassium, 276
Simon, inoculation of tubercle, 255
Simpson, intra-uterine polypi, 560
——— on Acupressure, notice of, 234
Skin, effects of flannel and scratching on, 256
Skoda, chronic gastric ulcer, 252
Skull, gunshot wounds of, 428
Smith (J. M.), notice of Eulogium on, 512
——— epiphysary disjunctions, 543
——— on fractures of lower extremity, 214
Southam, spontaneous fracture of urinary calculus, 550
Southern Ohio Lunatic Asylum, notice of report, 207
Spectral illusions of senses, 535
Spina bifida, 137
Spleen, cancer of, 141
Spondylisthesis causing difficult labour, 285
Sprains, shampooing in, 259
Sproule, quintuple birth, 559
St. George's Hospital Reports, review of, 187
Startin, paraffo-stearine for bandages and splints, 264.
Statistics of human growth, 67
Steffan, recovery after extensive wound of eyeball, 555
Steiner and Neureutter, pleurisy in children, 539
Sternum, luxation of body of, 39
——— sub-luxation of body of, 564
Stewart, cephalic version, 398
Still-born child, recovery of by electro magnetism, 563
Stomach, epithelioma of, 138

Stomach, cancer of, 141
Stormont, death from swallowing chloroform, 569
Strangulation of bowel by band, 263
Strychnia in epilepsy, 538
Styrax liquidus in itch, 258
Subclavian, ligature of left, 70, 285
Sugar of muscle, 528
Sulphate of quinia, hypodermic injections of, in fevers of Algeria, 537
Superior sternal articulation, anatomical structure of, 39
Supernumerary rib, 148
Supra-renal capsules, disease of without discoloration of skin, 571
Syme, treatment of incised wound, to promote union by first intention, 540
Syphilis, caused by an algoid vegetation, 571
——— changes of hair in, 537

T.

Taylor, new method of extracting cataract, 270
Teale, relative value of atropia and mercury in iritis, 265
Temperature in cholera, 539
——— in pneumonia, 539
Tenon, anatomy of capsule of, 241
Testis, bromide of potassium in affections of, 95
———, cystic disease of, 135
———, tubercular disease of, 135
Tetrachloride of carbon as an anæsthetic, 533
Thore, relation of chorea to insanity, 535
Thumb-nail, extirpation of under anæsthesia by cold, 281
Toxicology, microscopic, 562
Tröltsch, Aural Medicine, notice of, 238
Tubercle, formation of, 254
———, inoculation of, 255
———, morbid anatomy of, 536
Tubercular disease of testis, 135
——— ——— nodules in choroid coat of eye, 553
Tuberculosis of lungs, &c., 143
Tyrell, strychnia in epilepsy, 538
Tyson, cystic disease of kidney, 136

U.

Ullersperger, Curability of Pulmonary Phthisis, notice of, 237
Ununited Fractures, notice of Bigelow on, 507
Urea, excretion of, 315
Urinary calculus, spontaneous fracture of in bladder, 550
Uterus, extirpation of, in mistake for ovarian tumour, 570
———, fibrous tumour of, 411
———, reduction of an inverted, 405

V.

Velpeau, notice of Surgical Clinic of, 513
Vermiform appendix, perforation of, recovery, 145
Vesico-vaginal fistula, 280, 313
Virginia, Western Asylum of, notice of report, 503
Vocal cord, removal of fibro-plastic tumour from, 115
Volchers and Henson, accommodation of eye, 554

W.

Wales, wound of loins by shell, 275
Warren's Surgical Observations, notice of, 201
Wells, report on Meteorology and Epidemics of Philadelphia in 1866, 130
Western Lunatic Asylum of Kentucky, notice of report of, 206
——— Pennsylvania Hospital for Insane, notice of report, 203
West Virginia Hospital for Insane, notice of report, 205, 503
Wilson, organic changes of hair in syphilis, 527
Women, Diseases of, review of Bernutz & Goupil on, 166
Wood, bromide of potassium in puerperal convulsions, 566
Worcester Hospital for Insane, notice of report, 501
Wormley, Micro-chemistry of Poisons, notice of, 511
Worster, reduction of an inverted uterus, 405
Wounds, dressing for, 265
———, treatment of incised to promote union by first intention, 540

Y.

Yarrow, rupture of heart, 421
Yellow fever, treatment of, 390
Young, fatal hemorrhage from gums after scarification, 551

UNIVERSITY OF PENNSYLVANIA, PHILADELPHIA.

MEDICAL DEPARTMENT.

ONE HUNDRED AND SECOND SESSION—(1867-68).

William Gibson, M. D.,	Emeritus Professor of Surgery.
George B. Wood, M. D.,	Emeritus Professor of Theory and Practice of Medicine.
Samuel Jackson, M. D.,	Emeritus Professor of Institutes of Medicine.
Hugh L. Hodge, M. D.,	Emeritus Professor of Obstetrics and the Diseases of Women and Children.
Joseph Carson, M. D.,	Professor of Materia Medica and Pharmacy.
Robert E. Rogers, M. D.,	Professor of Chemistry.
Joseph Leidy, M. D.,	Professor of Anatomy.
Henry H. Smith, M. D.,	Professor of Surgery.
F. Gurney Smith, M. D.,	Professor of Institutes of Medicine.
R. A. F. Penrose, M. D.,	Professor of Obstetrics and the Diseases of Women and Children.
Alfred Stillé, M. D.,	Professor of Theory and Practice of Medicine.
D. Hayes Agnew, M. D.,	Demonstrator of Anatomy.

The Lectures of the Session will begin on the second Monday of October and close on the first of March.

One Introductory will be delivered to the Course.

Clinical Instruction is given throughout the Session, in the Medical Hall, by the Professors, and at the Hospitals. At the Pennsylvania Hospital and Philadelphia Hospital instruction is free.

The Dissecting Rooms, under the superintendence of the Professor of Anatomy and the Demonstrator, are open from the middle of September.

The room for Operative Surgery and the Application of Bandages, &c., is open early in September and throughout the Session, under the supervision of the Professor of Surgery.

Fees for the Lectures (each Professor $20)	$140
Matriculation Fee (paid once only)	5
Graduation Fee	30

R. E. ROGERS, M. D., *Dean of the Medical Faculty,*
University Building.

W. H. Salvador, *Janitor,*
University Building.

PHILADELPHIA SCHOOL OF ANATOMY,

Chant Street, Tenth Street above Chestnut, rear of St. Stephen's Church.

The Winter Course of Lectures will begin on Tuesday, October 15, 1867, at 7 o'clock P. M., and will continue till the 1st of March, on Monday, Tuesday, Thursday, and Friday evenings.

The course will embrace a systematic description of all the tissues of the body, with demonstrations on the cadaver, with the Class Microscope to demonstrate the finer Anatomy, Models, Drawings, &c., and lectures on Surgical Anatomy and Operative Surgery.

Special opportunities are afforded to those who wish to study operative surgery, and to candidates for the Army or Navy.

The Dissecting-Room is open daily, and is well supplied with material, at the usual fee.

Fee for the Lectures, $10; for Office Students, per annum (including Lectures, Quiz, &c.), $100.

For further information apply at the rooms, or to

WILLIAM W. KEEN, M. D.,
107 South Thirteenth Street.

PHILADELPHIA SUMMER SCHOOL OF MEDICINE,

No. 920 CHESTNUT STREET, PHILADELPHIA.

ROBERT BOLLING, M. D.
JAMES H. HUTCHINSON, M. D.
H. LENOX HODGE, M. D.
EDWARD A. SMITH, M. D.
D. MURRAY CHESTON, M. D.
HORACE WILLIAMS, M. D.

The Philadelphia Summer School of Medicine will begin its fourth session on March 1st, 1868, and students may enjoy its privileges without cessation until October.

The regular course of *Examinations* and *Lectures* will be given during April, May, June, and September, upon

ANATOMY,
SURGERY,
CHEMISTRY,
PHYSIOLOGY,
OBSTETRICS,
MATERIA MEDICA,
PRACTICE OF MEDICINE.

The attention of the profession and of students is invited to the importance of systematic study and of clinical instruction during the summer as well as during the winter, in order to obtain a good medical education in the short time usually required, and to our plan of combining daily Recitations with Lectures and reading of Text-Books. The object of this school is to teach medicine thoroughly, and to make use of every method that is really valuable.

CLASS-ROOMS contain a cabinet of Materia Medica, Bones, Bandages, Manikins, Illustrations, Text-Books, Microscope, Chemical Reagents, etc., and in them students may study, practise bandaging, and conduct microscopical and chemical examinations.

SURGERY.—A course of Lectures will be delivered by H. Lenox Hodge, M. D., on the history, causes, symptoms, pathology, and treatment of Surgical Diseases and Injuries, and upon the employment of the Microscope, Ophthalmoscope, Otoscope, Laryngoscope, Endoscope, Percussion, Auscultation, and the Thermometer in recognizing such disorders.

PERCUSSION AND AUSCULTATION in Diseases of the Lungs and Heart will be taught by James H. Hutchinson, M. D., by Lectures, and by the Clinical Examination of patients.

MICROSCOPE.—The structure of the Microscope, and the manner of using it, will be explained, and the microscopical appearance of the tissues and fluids in health and disease will be exhibited.

URINARY DEPOSITS AND TESTS.—Students will be instructed in the microscopical and chemical examination of the urine, and will be enabled to make themselves familiar with its practical employment.

CLINICAL INSTRUCTION.

PENNSYLVANIA HOSPITAL.—The advantage of attending the Lectures, Operations, and Clinical Examinations of patients at this important hospital will be secured without charge.

EPISCOPAL HOSPITAL.—Drs. Hutchinson and Smith will take the class through its well-arranged wards, so that by the bedside disease may be readily recognized and its symptoms accurately studied.

CHILDREN'S HOSPITAL.—Much of a physician's practice being among children, it is essential that their various disorders should be seen by the student. Drs. Hodge, Hutchinson, and Cheston will, during the session, have charge of the numerous out-door and in-door patients of this establishment, and will offer every facility to the class.

DISPENSARY FOR DISEASES OF THE HEART AND LUNGS will be conducted by Dr. Hutchinson in connection with his lectures.

FEE FOR THE WHOLE COURSE . . . FIFTY DOLLARS.

Or any part may be taken separately.

OFFICE STUDENTS will be received by Drs. Bolling, Hutchinson, and Hodge, at any period of the year; they will be admitted to the Summer School and to the Winter Examinations, and Clinical Instruction will be provided for them at the Pennsylvania, Philadelphia, Episcopal, and Children's Hospitals. They will be given special instruction in the Microscope, Practical Anatomy, Percussion and Auscultation, Practical Obstetrics, and Pathology. They will be enabled to examine persons with diseases of the heart and lungs, to attend women in confinement, and to make microscopical and chemical examinations of the urine. The class rooms will be open for study throughout the year.

WINTER COURSE OF EXAMINATIONS will begin with the Lectures at the University of Pennsylvania in October, and will continue till the close of the session.

Candidates for admission to the Army and Navy, and those desiring promotion to a higher grade, may obtain the use of the class-rooms, and be furnished with private instruction.

Fee for Office Students (one year)	$100
Fee for one Course of Examinations	30

Class-Rooms, No. 920 Chestnut Street, Philadelphia.

Apply to H. LENOX HODGE, M. D.,
N. W. corner Ninth and Walnut Streets.

SAVANNAH MEDICAL COLLEGE,

SAVANNAH, GA.

The Eleventh Annual Course of Lectures in this Institution will commence on the first Monday in November next, and continue four months.

FACULTY.

R. D. Arnold, M. D., Professor of Theory and Practice of Medicine.

P. M. Kollock, M. D., Professor of Obstetrics and Diseases of Women and Children.
Adjunct—Thos. Smith, M. D ; will lecture on Diseases of Women and Children.

W. G. Bulloch, M. D., Professor of the Principles and Practice of Surgery.
Adjunct—T. J. Charlton, M. D. ; will lecture on Minor and Operative Surgery.

J. B. Read, M. D., Professor of Materia Medica and Medical Jurisprudence.
Adjunct—R. J. Nunn, M. D. ; will lecture on Medical Jurisprudence and Toxicology.

Juriah Harriss, M. D., Professor of Physiology and Pathology.
Adjunct—J. G. Thomas, M. D. ; will lecture on Pathology.

W. R. Waring, M. D., Professor of Anatomy, and Dean of the Faculty.

W. M. Charters, M. D., Professor of Chemistry.
Adjunct—W. H. Elliott, M. D. ; will lecture on Pharmaceutical Chemistry and Uses of the Microscope.

W. Duncan, M. D., Demonstrator of Anatomy.

R. P. Myers, M. D., Assistant Demonstrator and Curator.

Practical Anatomy.—In addition to the thorough course of lectures by the Professor of Anatomy, an abundant supply of material will be furnished students for dissections. The dissection-rooms are large and airy, and the classes dissecting will be under the immediate supervision of the Professor of Anatomy, the Demonstrator, and his assistant.

Clinical Instruction.—The City and Marine Hospital is situated within two hundred yards of the College building. This large institution, a monument to the charity and enterprise of our city, is under the charge of members of the Faculty. It is admirably managed by a Board of Trustees, and capable of containing comfortably over two hundred patients. The hospital is divided into wards for practical medicine, surgery, and obstetrics. To each of these wards every student can have access, and enjoy the bedside instruction of the Professors who teach the respective branches in the College. Aside from the large number of patients who enter from the city and its vicinity, thus giving ample opportunity to students to study clinically the diseases of the South, our commercial marine furnishes annually a great variety of diseases peculiar to foreign climates. We do not, therefore, feel that we claim too much when we assert that but few colleges in the country can furnish better clinical advantages to students.

Beneficiaries.—One Beneficiary from each of the former Congressional Districts of the State will be received, according to the agreement with the Legislature. This will not, however, exclude other Beneficiaries, should the Faculty be satisfied that they merit the position.

Requisites for Graduation.—The applicant must be of good moral character, and have attended two courses of lectures—the first in a college of good standing, and the last in the Savannah Medical College.

The College building was used during the late war as a Confederate hospital, with the consent of the Faculty. It was retained as a hospital by the United States forces after the surrender of the city. The building has since been thoroughly renovated, and apparatus supplied for demonstration of lectures.

CHARGES.

For Course of Lectures . . .	$105	Dissecting Ticket (paid only once) .	$10
Matriculation	5	Diploma	30

RUSH MEDICAL COLLEGE,

CHICAGO, ILL.

FACULTY.

J. V. Z. Blaney, M. D., Professor of Chemistry and Pharmacy.
Jos. W. Freer, M. D., Professor of Physiology and Microscopical Anatomy.
J. Adams Allen, M. D., LL. D., Professor of the Principles and Practice of Medicine and Clinical Medicine.
E. Ingals, M. D. (Treasurer), Professor of Materia Medica and Med. Jurisprudence.
DeLaskie Miller, M. D. (Secretary), Professor of Obstetrics and Diseases of Women and Children.
R. L. Rea, M. D., Professor of Anatomy.
Moses Gunn, A. M., M. D., Professor of the Principles and Practice of Surgery and Clinical Surgery.
William Lewitt, M. D., Demonstrator of Anatomy and Prosector in Surgery.
Edward L. Holmes, M. D., Lecturer on Diseases of the Eye and Ear.
Edwin Powell, M. D., Lecturer on Clinical Surgery at the County Hospital.
Joseph P. Ross, M. D., Lecturer on Clinical Medicine at the County Hospital.

Charles Keil, Janitor.

The Twenty-fifth Annual Session will commence on Wednesday, the 2d of October, in the new College Building, corner of Dearborn and Indiana Streets, and continue eighteen weeks. For the Annual Announcement, or any information with reference to the College, address DeLaskie Miller, M. D., Drawer 5787, Chicago, Ill.

Fees.—Professors' Tickets, $50; Matriculation, $5; Dissecting, $5; Hospitals, $5; Graduation, $25.

PRIZES OFFERED BY THE CONNECTICUT MEDICAL SOCIETY FOR 1868.

The undersigned, a Committee of the Connecticut Medical Society, offer, in behalf of said Society, the following prizes, to be awarded in May, 1868, viz: They renew the offer of the Jewett Prize of Two Hundred Dollars, for the best essay on the question—"*By what hygienic means may the health of armies be best preserved?*"[1] They also offer the Russell Prize of Two Hundred Dollars, for the best essay on the subject—"*The Therapeutic Uses and Abuses of Quinine and its Salts.*"

The offer of both these prizes is extended to all physicians and surgeons of the United States, and of the British Provinces of North America. In awarding the prizes, the Committee will feel authorized to regard the literary merits as well as the professional and scientific value of the papers submitted; and should none be received which they think worthy of such generous prizes, they may take the liberty of withholding their decision until the offer can be renewed.

Competitors will send their essays, free of expense, to one of the Committee, on or before the first of March, 1868, each having on it a motto or device, which shall also be written or placed on a sealed envelope, inclosing the writer's name and address. The unsuccessful essays will remain with that member of the Committee in whose hands they were originally placed, subject to the order of their respective authors.

[It has been stated that a degree of health which is unusual prevailed in the Union armies during the late war, and the mortality from disease was much below the average in the great military campaigns of Europe. Is there truth in the statement? If true, to what extent is it so, and why is it? What are the facts? What is the explanation? These are transcendently important questions, to which the Committee can find no answer in the essays which have been offered for the Jewett Prize. They would not presume to direct the inquiries of competitors, but in this way (parenthetically, as it were) suggest a topic for consideration.]

BENJAMIN H. CATLIN, M. D., of West Meriden,
LEONARD J. SANFORD, M. D., of New Haven,
HENRY BRONSON, M. D., of New Haven,
MELANCTHON STORRS, M. D., of Hartford,
CHARLES L. IVES, M. D., of New Haven,
Committee.

---

[1] Those who forwarded essays on this question last year, are requested to let them remain until a decision is made, or recall them, through a friend, for alteration.

THE WILLS OPHTHALMIC HOSPITAL,

PHILADELPHIA.

A Course of Lectures and Practical Instruction in Ophthalmic Surgery will be given in the institution during the months of November and December.

The course will embrace the most important subjects of ophthalmic science, including the *Anatomy of the Eye, the Physiology of Vision, Ophthalmoscopic Diagnosis, Optical Defects of Vision, and the Pathology and Operative Surgery of the Eye.*

Instruction will be made demonstrative with abundant material for illustration by dissections, models, drawings, and optical apparatus.

Attention will be given to the instruction of each member of the class in the practical use of the Ophthalmoscope.

The Operative Clinics of the Hospital will present an extended field for observing the Operative Surgery of the Eye.

Fee . . . . . . Ten Dollars.

R. J. LEVIS, M. D., *Surgeon to Wills' Hospital,*
No. 1104 Arch Street.

TO PHYSICIANS.

By request, Prof. Horatio R. Storer will deliver his second private course of twelve lectures upon the

SURGICAL DISEASES OF WOMEN

during the first fortnight of December, at his rooms in Boston. Fee, $50.

Certificates of attendance upon the course just completed have been issued to the following gentlemen: Drs. C. M. Carleton, Norwich, Conn.; Daniel Mann, Pelham, N. H.; G. E. Bullard, Blackstone, Mass.; J. A. McDonough, Boston, Mass.; M. C. Talbott, Warren, Pa.; H. Gerould, Erie, Pa.; E. F. Upham, West Randolph, Vt.; W. A. I. Case, Hamilton, C. W.; and W. L. Wells, Howall, Mich.

Boston, June 22, 1867.

A MANUAL FOR THE DISSECTING ROOM.—Just Issued.

PRACTICAL DISSECTIONS.

By RICHARD M. HODGES, M.D.,

Late Demonstrator of Anatomy in the Medical Department of Harvard University.

SECOND EDITION, THOROUGHLY REVISED.

In one handsome royal 12mo. volume, half bound, $2 00.

The best practical guide for the student of anatomy yet published.—*Chicago Med. Journal,* August, 1867.

After a careful examination of the "Practical Dissections," we can fully commend it to the favorable consideration of all engaged in the pursuit of practical anatomy.—*Buffalo Med. and Surg. Journal,* June, 1867.

A work of considerable merit, and one likely to be useful.—*London Med. Times and Gazette,* June 29, 1867.

This small volume of less than 300 pages appears to contain all the instruction needful for the student in pursuing his dissections. The author has succeeded in condensing an immense amount of matter in a small compass, without embarrassing the sense in the slightest degree.—*Pacific Med. and Surg. Journal,* June, 1867.

We have carefully examined this very neatly bound volume, and advise its use to students, who will be aided by it very much in their dissections.—*Southern Med. and Surg. Journal,* July, 1867.

HENRY C. LEA, Philadelphia.

CHAMBERS ON INDIGESTION.—Just Issued.

THE INDIGESTIONS;

OR, DISEASES OF THE DIGESTIVE ORGANS FUNCTIONALLY TREATED.

E9
662-4

By THOMAS KING CHAMBERS, M. D.,
Honorary Physician to H. R. H. the Prince of Wales, &c.

In one handsome octavo volume of 287 pages; extra cloth, $2 50.

The work is made up principally of a detail of well selected and typical cases, to each one of which are added comments purely clinical in character. The cases cover every conceivable grade of functional indigestion, from the slightest inconvenience after meals to that condition which actually ends the life of the patient. Every useful detail is faithfully figured, in order to carry out the evident design of the writer in making the work as complete and as thorough as possible. No practitioner can peruse it without benefit, nay, without comfort, for he cannot fail to find some of his most puzzling cases of indigestion explained in a clear, practical, and masterly manner. The different plans of treatment are rational, simple, and effective, and the reader is all the time made conscious that they are founded upon clinical experience alone. Associate with this the rare faculty which Dr. Chambers has of infusing an enthusiasm in his subject, and we have in this little work all the elements which make it a model of its sort. We have perused it carefully, have studied every page; our interest in the subject has been intensified as we proceeded, and we are enabled to lay it down with unqualified praise. It is just such a work as every practitioner should have, if he wishes to treat intelligently the majority of the patients who seek his advice. If the book does not prove a great success, and pass through several editions, it will be because the profession do not appreciate fine writing, sound philosophy, and sterling common sense.—*N. Y. Med. Record*, April 15, 1867.

It is in the combination of these qualities—clear and vivid expression, with thorough scientific knowledge and practical skill—that his success as a teacher or literary expositor of the medical art consists; and the volume before us is a better illustration than its author has yet produced of the rare degree in which those combined qualities are at his command. Next to the diseases of children, there is no subject on which the young practitioner is oftener consulted, or on which the public are more apt to form their opinions of his professional skill, than the various phenomena of indigestion. Dr. Chambers comes most opportunely and effectively to his assistance. In fact, there are few situations in which the commencing practitioner can place himself in which Dr. Chambers's conclusions on digestion will not be of service.—*London Lancet*, February 23, 1867.

This is one of the most valuable works which it has ever been our good fortune to receive. It is not one of those disagreeable, stupid, and intolerable volumes, consisting of a set of long-winded dissertations on some special disease. We regret that we have no more space for extracts, but we have said enough to prove to the profession that here, at all events, is a work worth reading, not with the careless inattention that a great number of medical and surgical works deserve—if they deserve even that—but with diligent and painstaking study, as being a record of experience that will act—to any one who has the common sense to practise up to it—as a key to disease, and as a charm wherewith to chase away disease, and restore, under God, our patients to their pristine vigor.—*London Medical Mirror*, Feb. 1867.

This elegant volume, by the author of "Lectures, chiefly Clinical," has been our Christmas book, and we found it as interesting as any of the popular annuals which deluge us at that festive season. We hope the author will accept as a well-deserved compliment the remark, that, after all that has been written upon this subject, we consider it a thorough triumph to have put forth so instructive a volume on indigestion.—*Dublin Med. Press and Circular*, Jan. 23, 1867.

The book is a good one, and especially for the busy practitioner; largely made up of well-classified cases, with a commentary upon them, it lacks the formality of a set treatise, can be caught up at any time, and opened anywhere, with the certainty of finding profitable knowledge pleasantly presented. — *Cincinnati Journal of Med.*, June, 1867.

The work is full of interest and instruction, and will not disappoint either student or experienced practitioner. It is eminently practical.—*Pacific Med. and Surg. Journal*, July, 1867.

Whatever Dr. Chambers writes is worth buying and reading. Of course, this is a good book. No practitioner of the present time has any right to omit perusal of Dr. Chambers' writings. The present work is clear, practical, and satisfactory. We place it among leading works of study and reference.—*Chicago Med. Journal*, Aug. 1867.

The style of the author is so racy, his expression so clear and vivid, and his knowledge and skill so manifest, that the reader becomes interested in spite of himself. In the absence of opportunities for listening to clinical instruction, the young practitioner especially, whose chief difficulty consists in determining a name for the particular case he is called to treat, will find this book of inestimable value.—*Leavenworth Medical Herald*, Aug. 1867.

HENRY C. LEA, PHILADELPHIA.

BINDING SECT. MAR 4 1966

R
11
A5
n.s.
v.54
cop.2
Biological
& Medical
Serials

The American journal of the
medical sciences

PLEASE DO NOT REMOVE
CARDS OR SLIPS FROM THIS POCKET

UNIVERSITY OF TORONTO LIBRARY

STORAGE